TECHNOLOGY DEPT.

First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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PUBLIC LIBRARY DEC 26 1930 DETROIT

USED CAR STOCKS PLACED AT 800,000

General Motors Truck Co. Cuts Prices $50 to $150 On Three Light Models

Mechanical Revisions Also Announced on Two Trucks; Price Changes Affect 32 Different Wheel Bases

PONTIAC, Mich., Dec. 18.—General Motors Truck Company today announced, effective immediately, price reductions ranging from $50 to $150 on three light duty models. On all types of the six wheel heaviest duty units, prices are reduced an even $600. O. L. Arnold, vice-president in charge of sales, in making the announcement declared that these reductions were made possible by the company's 1930 operations. The changes announced affect ten models in the G. M. T. line, with thirty-two different wheelbase specifications.

In addition to the price changes there are certain revisions announced regarding transmission and rear axle drive options on the two heaviest models, comprising nineteen different types. Revisions in

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NOV. BUILDING PERMITS SHOW LESS PRONOUNCED DECREASE THAN IN OCT.

New York, Dec. 18.—Although the falling off in proposed building and construction activities which was noted throughout the United States during October continued through the month of November, the declines were less pronounced than during the preceding month, according to official reports of building permits issued in 587 leading cities and towns and tabulated by S. W. Straus & Co.

Building permits totaling $131,871,594 were issued during November, compared with a total of $150,751,374 in October. This represents a loss of 12 per cent. In normal years a decline of about 8.9 per cent. may be expected. October had shown a loss of 10 per cent. from September contrasted with a normal expectancy of a 5 per cent. increase.

During November, 1929, permits issued were $194,289,602. November, 1930, thus showed a loss of 32 per cent. from the same month of the previous year. October, 1930, had declined 40 per cent. from October, 1929.

CADILLAC CO. CLOSES PLANT FOR 2 WEEKS TO TAKE INVENTORY

Detroit, Dec. 18.—As usual at this time of the year the Cadillac Motor Car Company shut down production operations this morning for a two-week period for the purpose of taking inventory. The factory will resume operations January 5.

This production stop followed a two-day session attended by the field organization, at which plans were discussed for next year. R. H. Grant, vice-president of General Motors, addressed the representatives, as did J. C. Chick, general sales manager of Cadillac.

DELCO REMY CORPORATION PLANTS OPERATE STEADILY

Anderson, Ind., Dec. 18.—F. C. Kroeger, president and general manager of Delco Remy Corporation, employing 6,000 persons here, said this week that plants were operating steadily and prospects for improved conditions in January were manifest.

HIGHWAY CONSTRUCTION SEEN AS BIG AID TO BUSINESS

WASHINGTON, Dec. 18.—More and better highways throughout the country will create sales for more vehicles, in turn giving men jobs, while private business will follow the example of the government and increase its working capital, resulting in better business conditions generally, A. W. Childs, chief of the automotive division of the Department of Commerce, declared today.

Speaking from Station WOL on the subject of the approaching annual convention and road show of the American Road Builders' Association to be held in St. Louis January 10 to 16, Mr. Childs said more than 50 per cent. of the road building dollar is going directly to labor and about 25 per cent. into materials.

He asserted that during the working season of about eight months the average expenditure for road building is about $250,000,000 a month, of which approximately $125,000,000 a month is being paid for labor.

On Federal aid construction alone,

(Continued on Page 4)

THREE WILLYS LINES IN 1931 OFFERING

Toledo, Dec. 18.—Preparatory to a national announcement on January 3, Willys-Overland today announced that its 1931 lines would comprise three new Willys cars, "a big six, priced like a four; a powerful eight and a brilliant Knight." It is understood here that the number of body models in the united Willys lines will be largely reduced for 1931.

DEALERS REDUCE HOLDINGS BY 350,000 UNITS IN 1930

Retailers Get Results by Paying Closer Attention to This End of Business; Junking Plan Helps

NEW YORK, Dec. 18.—Current holdings of used cars by retail automobile dealers in the United States approximate 800,000 units, a reduction of about 350,000 units since the first of the year, according to estimates based on the best information available on the movement of used cars.

While no absolutely accurate information is available on the inventories of used cars in the hands of dealers, it was generally agreed that as of January 1, 1930, stocks were at the highest level in the history of the industry and the most competent authorities placed the total at that time at approximately 1,150,000.

One of the best sources of information regarding the handling of used cars is the report of the Department of Commerce on the financing of the sales of these cars by the finance companies. These figures show that in the first nine months of this year used car financing, in units, was 11 per cent. greater than new car time sales, as against an advantage of 20 per cent. in favor of the new cars in the corresponding period of last year. Also this year used car financing showed a gain of 2 per cent. over last year, while new car time sales were off 27 per cent.

As it has been plainly evident all year that dealers have used more care in accepting trade-ins, the above figures would tend to show that stocks of used cars have been cut sharply. The estimated reduction of 350,000 units this year amounts to about 30 per cent.

New cars financed in the first nine months of this year amounted to 1,114,978, as compared with 1,237,304 used cars, the used units exceeding the new by 11 per cent. In the corresponding period of last year, new car financing reached 1,517,520 units, as against 1,213,703

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FORD CLOSES FOR INVENTORY PERIOD; SEES EARLY REVIVAL

Detroit, Dec. 18.—Following its custom the Ford Motor Company shut down production operations this morning in order to take inventory. Usually these shutdowns have been of two weeks' duration and it is expected that the present one will not be longer than that period, although no announcement as to this has been made.

Henry Ford himself arrived in Detroit last night, after having driven over the road from Washington, where he was a guest of President Hoover. Considerable excitement was occasioned yesterday at Youngstown, O., when Mr. Ford's car was involved in a traffic accident. After a half hour's delay the magnte and Secretary Leibold shifted to another car and came on home.

Mr. Ford has little to say about his visit with the President. He is credited with having remarked that he believes a business recovery will start soon, probably slow, though. Also he is reported to have said that "because of the improved prospect the plants of the Ford Motor Company are being operated at a higher rate than the present volume of busness would justify."

Cook County's Car Sales Off 32% in Eleven Months

Chicago, Dec. 18.—New car registrations in Cook county for the eleven months of 1930 were 32.2 per cent. less than for the corresponding period last year. Total figures for this year were 76,618, compared with 110,084 in 1929, 86,096 in 1928 and 69,080 for the eleven months of 1927.

Ford was outstanding among the volume producers in that it was the only make in this class to score a gain for the period, having 29,196 this year against 27,627 in 1929. Studebaker lost only eighty-one cars this year over last, with 2,675 for 1930 and 2,756 for 1929.

Franklin scored a substantial gain with 525 for this year and 372 for last, while Cord had 219 for 1930 against only eighty-four last year and Pierce-Arrow registrations for this year were only four less than last, the comparative figures being 324 and 328, respectively. Moon-Windsor had a slight gain, with 130 for this year and 124 for 1929.

Buick sales were 5,034, as compared with 6,570 in 1929. Studebaker sales were 2,675, followed closely by Pontiac, with 2,631, as against 6,305 in 1929.

Chrysler registrations were 2,537. Last year this line had 3,207.

The standing for the eleven

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General Motors Exports Up Sharply in November

NEW YORK, Dec. 18.—Sales of cars and trucks by General Motors Corporation to dealers in Canada and overseas in November amounted to 9,102, a sharp gain over the preceding month and the highest total for a single month since last August, according to figures released by the corporation this week.

The November total compared with 5,239 in October, an increase of 74 per cent. The September total was 8,891, while in August the shipments to foreign dealers were only slightly higher than in November, amounting to 9,470.

These figures include unit sales of Chevrolet, Pontiac, Oldsmobile, Marquette, Oakland, Viking, Buick, La Salle and Cadillac passenger and commercial cars, but do not include shipments of foreign manufacturers controlled by General Motors, such as Opel in Germany.

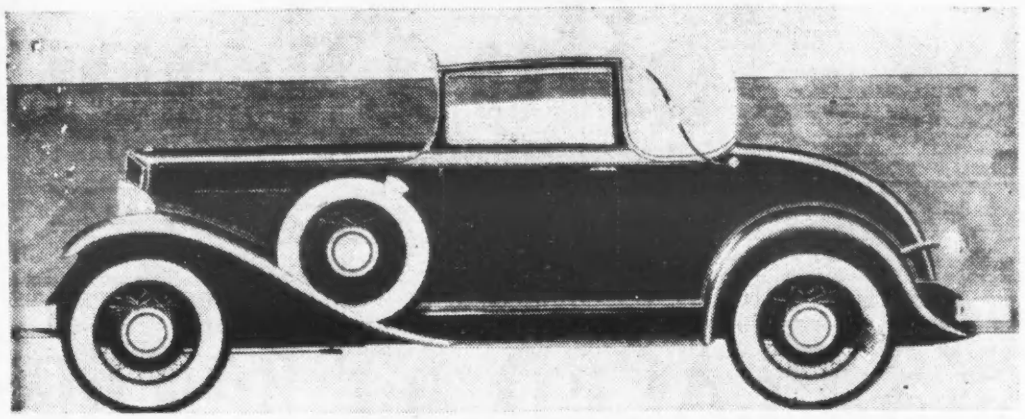
Shipments in November continued to run below a year ago, however, comparing with 21,232 in November, 1929, a decline of 57 per cent. The uptrend in November of this year, however, was in contrast to a downward tendency in November, 1929, from the preceding month.

For the first eleven months of this year, Canadian and overseas shipments of the above-named cars amounted to 126,609, as against 359,675 in the corresponding period of last year, a decline of 64 per cent.

In the first quarter of this year shipments were 45,192, as against 109.946 a year ago, off 58 per cent.

(Continued on Page 9)

New De Vaux Six Cabriolet



ABOVE is the first picture published anywhere of the new cabriolet which will be part of the new line of De Vaux six-cylinder cars to be placed on the market soon by the newly formed De Vaux-Hall Motor Company

USED CAR STOCKS PLACED AT 800,000

Continued from Page 1

used cars, a difference of 20 per cent. in favor of the new cars. These figures, of course, do not include all the financing but only the totals reported to the Department of Commerce by the several hundred financing companies to make such reports. The operations of these companies cover the bulk of the financing, however.

It is estimated that in 1929 sales of cars on time payments amounted to around 65 per cent. of the total, thus the above figures should accurately reflect the relation between new and used car sales for this year and last.

Another factor in reducing the total used car stock is the "highway safety plan," under which various member companies of the National Automobile Chamber of Commerce share with their dealers the expense of destroying unsafe and obsolete vehicles. It is expected that this plan eventually will remove 400,000 ancient vehicles from the roads every year. The junking carried out this year, however, did not reach that total, but it is a factor to be reckoned with, and one that will grow cumulatively in the future.

It may be noted here that the estimate based on time sales of used cars presented in this story is borne out by surveys conducted locally by representatives of Automotive Daily News. There is no question that the dealer organization of the industry goes into 1931 in better condition as regards used car inventories, than was the case twelve months ago.

LUDLUM STEEL CENTERS PRODUCTION AT DUNKIRK

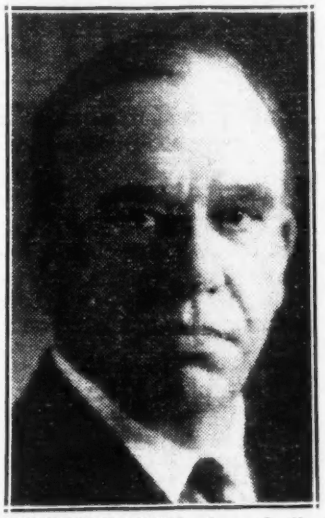
Dunkirk, N. Y., Dec. 18.—Simultaneously with the promotion of Frank B. Lounsberry, vice-president and general manager of the local plant of the Ludlum Steel Company, to general operating manager of all Ludlum plants, comes the announcement that practically all production will be transferred to the Dunkirk plant and that hereafter the Watervliet, N. Y. plant will be operated as an overflow unit. Melting operations of all grades of steel, including stainless steel, will be concentrated here, and during the next three months transfers will be made from time to time until the Watervliet plant is reduced to a skeleton unit. Incoming orders will be produced at the Dunkirk plant until it is in operation at full capacity.

LEO N. BURNETT JOINS ERWIN, WASEY & CO.

Indianapolis, Ind., Dec. 18.—Leo N. Burnett, for the last eight years connected with the Homer McKee Company, advertising agency, here as copy and contact man on the Marmon Motor Car Company account, will join the Chicago staff of Erwin, Wasey & Co. January 1. Mr. Burnett was formerly advertising manager of the Cadillac Motor Car Company of Detroit, coming to Indianapolis several years ago as advertising manager of the Lafayette Motors Company.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

New Head of White



ASHTON G. BEAN, whose election as president of the White Motor Company of Cleveland, O., was announced in Automotive Daily News, December 17

HAMPDEN PRODUCTS ANNOUNCES SALESMEN

Springfield, Mass., Dec. 18.—Hampden Automotive Products, Inc., announces the following new salesmen established in the respective territories:

W. E. Maxwell, of Newark, O., to cover central southern Ohio and Kentucky.

J. G. Goldstein, of Newark, N. J., to cover northern New Jersey and metropolitan New York city.

G. C. Burton, Jr., of Greensboro, N. C., to cover North and South Carolinas and Virginia.

Harry L. Dobbs, of Atlanta, Ga., to cover Tennessee, Georgia, Mississippi, Florida and Alabama.

J. C. Adams Company of Toronto, Canada, to cover eastern Canada and the Maritime provinces.

H. J. Quinlan to cover New York state, main line territory, Albany to Buffalo in addition to New England territory which he has covered in the past.

I. H. C. FILES PLANS FOR BUILDING AT SYRACUSE, N. Y.

Syracuse, N. Y., Dec. 18.—The International Harvester Company of America, with headquarters in Chicago, has filed plans with the city building commission for the erection of a garage, service station and warehouse in Teall Avenue, the work to be started in March, 1931. Plans provide for a one-story brick and steel structure 80 by 200 feet in size.

BUS REVENUE GAINS

Newark, N. J., Dec. 18.—In the six weeks since the Public Service Coordinated Transport of New Jersey returned to the straight 5-cent cash fare on its buses and trolley cars there has been a slight improvement in the company's revenues, according to John L. O'Toole, vice-president in charge of public relations. Mr. O'Toole said that the shortness of the period since the abolition of the 5-cent token and the 10-cent cash fare made it impossible to draw any real conclusions as to the effect of the change.

AJAX BONDHOLDERS URGED TO DEPOSIT BY DEC. 29

New York, Dec. 18.—The Ajax Rubber Company Bondholders' Protective Committee has sent a letter to holders of the first mortgage 8 per cent. gold bonds, urging the deposit of their bonds before the expiration date on December 29. The committee states that the trustee under the mortgage securing the bonds is preparing to foreclose the mortgage and to exercise its power of sale as to certain of the properties pledged.

The protective committee is composed of Frank S. Connett, vice-president of W. A. Harriman & Co.; John E. Bierwirth, vice-president of the New York Trust Company, and O. P. Graham, chairman of the executive committee of the First National Bank and Trust Company of Racine, Wis.

OTHER FINANCIAL NEWS

MACK TRUCKS, INC.

Statement of Mack Trucks, Inc., and subsidiaries as of September 30, 1930, shows total assets of $65,446,983, comparing with $68,727,313 on December 31, 1929, and total surplus of $54,210,226, against $54,760,637. Current assets on September 30 amounted to $40,451,106 and current liabilities $4,120,649, comparing with $44,292,990 and $6,388,547, respectively, at close of 1929.

SEAGRAVE CORPORATION

Seagrave Corporation has declared a dividend of 15 cents on the common stock, payable January 15 to stock of record December 31. Previously dividend on the common stock was 30 cents quarterly. The regular quarterly dividend of $1.75 on the preferred stock was declared payable January 15 to stock of record December 20.

CITROEN

Gross profits of the Citroen Automobile Company of France, for the year ended June 30, last, amounted to 174,000,000 francs, against 169,000,000 francs for preceding year. Directors proposed amortization of entire costs of bond issues and allocation of 115,000,000 francs to reserves and depreciation, leaving net profits of 31,784,000 francs and permitting dividend of 40 francs, or 8 per cent. on 600,000 cumulative preference B shares and 35 francs, or 7 per cent., on 200,000 A shares, which are entitled to four votes each in ordinary and two votes each in extraordinary shareholders' meetings. The total capital is 400,000,000 francs. There are 75,000,000 francs 5½ per cent. and 100,000,000 francs 7½ per cent. bonds outstanding. The latter also receive a bonus. Reserves now amount to 550,000,000 francs.

Turnover of Citroen during the year ended June 30, 1930, totaled 1,780,000,000 francs on 84,292 vehicles compared with 1,697,000,000 francs on 86,869 vehicles in the preceding fiscal year. During the second half of 1930 sales have been running approximately 10 per cent. under 1929. Current production schedule calls for output of 300 units daily.

Andre Citroen, president, has informed stockholders that the company is contemplating supplying motor buses to the municipality of Paris, whose contract with the present concessionaires expires shortly.

SPARKS *from* DETROIT

* * *

A Three-Man Job

* * *

The Seven-Day Week

* * *

Preparing for the Show

* * *

Chris Sinsabaugh—Detroit Editor

TALK about looking for a needle in a haystack! How would you like to wade through a half million manuscripts and weed out 1,011 prize winning essays? And make the selections in time to give Santa Claus a chance to deliver them to the Christmas stockings? Well, that's the job Floyd Gibbons, Eddie Guest and Thomas P. Henry are engaged on at the present time, and they will have to read faster than Gibbons can talk on the air in order to get through in time. For the purpose of identifying these hard working gentlemen, permit me to introduce, reading from left to right, the famous headline hunter and radio broadcaster, the writer of human interest poetry and the president of the American Automobile Association.

They are the judges appointed to make the awards in the contest promoted by the Plymouth Motor Corporation, which offered 1,011 prizes for the best essays on "Why I'd Buy a Plymouth." This went out by radio for thirteen weeks and the results have been simply stupendous. More than 500,000 essays have been sent in, coming from forty-seven different countries, and the judges right now are weeding the wheat from the chaff in their preliminary selections.

What a prospect list Plymouth will have with 500,000 people already Plymouth conscious, even if all but 1,011 will be somewhat disappointed when the report is made! The grand prize is a $1,000 annuity for life; there are five trips around the world, five $1,000 cash awards and twenty-five Plymouth cars included in the rewards for proper definitions of Plymouth's fine points. All told, it will cost $75,000.

* * *

IT cost the Detroit Automobile Dealers' Association more than $4,000 to bring its members together into an agreement to close their stores on Sunday. The closing started July 6 last, with 93.8 per cent. of all the retail establishments in Wayne county pledged to take a day off. It lasted until the preliminaries of the 1931 campaign started, when some dealers grew restive because of possible loss of business, when every sale counts for so much, and the breakdown came when retailers of one of the low priced makes sent out formal notice that they no longer could follow the mandate.

Of course with the doors of one set of dealers open on a Sunday, others in the same price bracket could not be expected to sit quetly by and risk the loss of possible sales, and the D. A. D. A. decided to throw up the sponge and let 'em fight it out. So Detroit joins in with other big cities like Chicago, Cleveland, Indianapolis and Milwaukee and will make it a seven-day week.

* * *

RADICAL changes in procedure at the New York show are being planned by Detroit car manufacturers. There will be a curtailment of hotel displays for one thing. Some will cut out dealers' meetings, and others are going so far as to give up the conventional dinners and luncheons for their retail representatives. It will be a New York show different from its predecessors of late years, each exhibitor there on a strictly business basis and eliminating time wastage on both sides—manufacturer and dealer. Out of it all will come a well rounded campaign for 1931 which should make money for the man who sells 'em as well as for the man who makes 'em.

* * *

WHILE Generol Motors intends to follow its usual custom of a giant display of the complete line at the Astor, the units will carry out individual plans so far as dealer contact is concerned. It perhaps will surprise the industry to learn that there will be no pretentious Chevrolet dealer meetings such as have been held in the past, when theaters have been rented to care for the turnout. This is not necessary now, Chevrolet executives figure, because all this educational work was accomplished on the recent trip of the headquarters staff to the fifty key cities of the country, which was completed only last week. Oakland-Pontiac plans a dealer dinner at the Pennsylvania for Monday night of show week.

Oldsmobile will have its headquarters at the Astor instead of the Roosevelt, where it was last year. There will be no dealer meetings. Instead it is planned to secure a hall convenient to the show section in which the Oldsmobile dealer display will be made. In this hall there will be a series of booths, each occupied by a representative of some one of the departments—engineering, service, advertising, etc.—who will be prepared to answer all questions. A cut-out chassis also will be a part of the affair. The dealers' dinner will be on Wednesday night.

Balancing Departments to Meet Conditions Pays

Wichita Dealer Finds Service Gains Offset Lower Car Sales

WICHITA, KAN., Dec. 18.—The automobile dealer who has readjusted his business properly during the past few months with the idea in mind of making one or more departments of his business take care of losses in other departments, is the one who will profit when better times set in in the spring, according to Carl Evans, general manager of the Arnold Brothers Automobile Company of Wichita, with branches in several Kansas cities.

Mr. Evans, recognized as one of the outstanding automobile executives in this part of the country, while admitting times are not as good as they were in other years, refuses to lay down just because new cars are not moving as fast as some dealers think they should. When sales started falling off Mr. Evans got busy and started stressing certain departments which were sure money makers and rearranged the business of his company, which handles Dodge automobiles and trucks and Plymouth cars.

When it became difficult to sell new automobiles, the Arnold company turned to other departments. Today the parts and service departments are making money, according to Mr. Evans, and will continue to do so. Salesmen are stressing the Dodge trucks and sales are mounting.

The Arnold Company, under Mr. Evans' management, did not reduce its personnel and cut wages of the men who would suffer as a result The salary reductions came from the department of the executives, the men who could better stand the reduction.

"Our mechanics are drawing as much money today as they did months ago," said Mr. Evans. "In fact, some are drawing more money. We did not discharge a porter or office boy and thus save $20 a week. We went to the man higher up in the organization and lowered his salary. A larger saving was effected in this way and the personnel was not reduced.

"Since our service department is being stressed now, it would have been folly to have discharged a few mechanics and forced the rest to work for a lower wage," Mr. Evans continued. "We kept all mechanics who were able to turn out the work and built up the department. Top salaries are paid, and this policy has brought the results. The service department is making money and our patrons are kept well satisfied.

"Our parts department also is making money. The Wichita company serves a wide territory, parts being shipped from here to all parts of Kansas. No longer does one have to wait for parts to come from the factory. They are sent direct from the Wichita depot. Our truck depot saves much time and expense and is a money maker.

"There is money in trucks now," Mr. Evans said. "The truck market is different than the automobile market now. The man who depends on a truck for his livelihood can't afford to do without the machine. The man who does not use an automobile in his business can get along without a car. But the man whose truck earns him his bread and butter needs a machine. With trucking on the increase now, our sales are mounting.

"The Dodge line of trucks, in my opinion, is without an equal. One never got more value for his dollar than he can today. The truck line is being pushed now, and results are being shown."

Real bargains are being offered by the Arnold Company in used cars at the present time. Many repossessed cars, driven less than 2,000 miles, are offered at a saving of several hundred dollars under the regular list price.

"If a man seeking a good automobile would visit our used car department, he couldn't make a mistake at the present time," Mr. Evans contends. "Never again will one find the bargains being offered now. Some of the cars selling for $500 under list price look almost as good as they did when they left the factory. Mechanically, they are almost perfect."

Mr. Evans expects better times in the automobile industry shortly after the first of the year, although he does not expect better times to come with a rush. Instead, he says, conditions will improve gradually until late summer.

With a good wheat crop in Kansas the industry will be in good shape again by fall, he reasons. As Kansas is the leading winter wheat state of the nation, much of the automobile man's business is drawn from the farm. The merchants also depend on farm prosperity. One reason for the slump this year is that the farmer raised a good crop of wheat, but prices were the lowest in years.

"A good wheat crop in 1931 with at least average prices will mean much to the automobile industry," Mr. Evans declared.

"We are not feeling blue. We are working harder than ever before and are looking to the future," Mr. Evans said. "There is more money in the country today than ever before. If people would quit talking hard times, all business would be better off. Although our business this year hasn't been as good as it has been in other years, we're not pessimistic. No business man can expect to pile up profits year in and year out."

DEALER DOINGS

TRENTON A. D. A. DISCUSSES LEGISLATIVE MATTERS

Trenton, N. J., Dec. 18.—Legislative matters in connection with the motor vehicle industry were discussed by members of the Trenton Automobile Trade Association at a luncheon meeting at the Carteret Club. John L. Brock, president of the organization, presided.

LASSER MOTOR CORP. GETS NEW JERSEY CHARTER

Newark, N. J., Dec. 18.—The Lasser Motor Corporation, Ford dealer, has been incorporated with an authorized capitalization of $125,000. Jacob Lasser, Harold Lasser and William S. Myers, Newark, are the directors.

HUPMOBILE DISTRIBUTOR IN ROCHESTER EXPANDS

Rochester, N. Y., Dec. 18.—James J. Williams, president of the firm of James J. Williams, Inc., Hupmobile distributor, has leased the salesroom and service station at 350 Monroe Ave., to the Archer Motors, Inc., Ford dealership. The Williams organization will remove to larger quarters at 1048 University Ave. The Archer company has been located at 111 Mt. Hope Ave. Larger quarters were made necessary by expanding business and a site closer to the downtown section was desired, according to R. E. Archer, president.

NEW HUDSON-ESSEX DEALER IN HERKIMER, N. Y.

Herkimer, N. Y., Dec. 18.—The S & G Motors, Inc., has been organized here to handle the sales and service of the Hudson-Essex motor cars in Herkimer, Mohawk, Frankfort, Ilion, Little Falls and Dolgeville. The new firm will open January 1 at 306-307 North Main St. in the building now being constructed. This building will house the new and used car display, as well as parts and service.

Ford Dealer Finds Force Reacts To Policy of Friendliness

ATLANTA, Ga., Dec. 18 (UTPS).—"Treat your sales force like robots," says W. J. Grant of the Grant-Harris-Rippey Company, Ford and Lincoln dealer of Atlanta, Ga., "and sales will become mechanical.

"Treat them like human beings, however, and you will be surprised at the results you can obtain, even in a year of business depression. The best automobile salesmen are temperamental. They are easily discouraged. Even the best of them are apt to fall off in sales when something goes wrong with their plans.

"Therefore, when you find one whose sales are slipping a little, do not let him out. Rather, call him in and have a talk with him.

"Lots of times the salesman is worried over things and a little human sympathy, some one who is willing to listen to him, goes a long way towards putting him back into line. At other times a man may be convinced that he is working on an impossible job. Shift him. Again, he may be discouraged over a bit of failure.

"In such a case, let him know that you understand, for all of us have met with failures in our lives. The best way to build a loyal organization is to treat your employees with the consideration due to human beings; to recognize the fact that the better the man is, the more likely he is to be high-strung.

"Next, give your men an opportunity to make a little extra money as a reward for hard work of various sorts. We try always to have some scheme on by means of which the hard-working salesman can add to his salary; rewards based on total sales, on points made during the month; on the moving of used cars or cars too long in stock.

"No organization is going to succeed if its management is too cold and dry, its methods too sharply outlined and inflexible. Keep the interest of your salesmen up to a high point by means of contests and other devices.

"We recently completed a very successful contest, which combined all of the features I have mentioned. The sales force was divided into two teams of eight men each.

"A team prize of $75 was offered to the team making the highest net sale of new and used cars. Added to this, a prize of $25 was offered to the salesman having the highest net sales to his credit, both in new cars and in used cars. And for sales over $1,000, a bonus of $5 per thousand was offered.

"The contest lasted for a month, and during that month sales reached a figure that would compare well with any normal month of business. The salesmen caught the spirit of competition, and they were allowed to make a little extra money.

"The high man during this particular contest sold a net total of nearly $7,000 worth of new and used cars, and his share of the prize money was more than $65. Several other salesmen added materially to their monthly income as a result.

"The expense was a relatively small matter compared with the results that were secured. And the method is one that holds the sales force together, allows them to make a little extra money and keeps them on tip-toes. What more could anyone ask?"

Philadelphia A. T. A. Gives Tips on Show Salesman Training

PHILADELPHIA, Dec. 18.—The Philadelphia Automobile Trade Association has issued a valuable tip, by bulletin, on the preparation of salesmen for the annual automobile show, which takes place in January. This tip to the dealers and distributors says:

"The men who represent you at the automobile show will reflect to the public what you are. Now is the time to prepare your salesmen for that week's work. Drill them, test them by questionnaire and examinations, even going so far as restricting their appearance as your representatives at the show unless you are sure they know their own goods thoroughly, also their competitors' products. If you do this, you will be worthily represented and do more business than otherwise."

Well Written Copy

"But Officer, Look!"
150 GALLONS of GASOLINE (SOCONY SPECIAL) FREE
with every purchase of a USED CAR
Year Car Down Payment
1930 Auburn 6-85 Sedan, Executive Car $442
1930 Auburn 8-95 Sedan, Executive Car 538
1929 Auburn 6-80 Victoria 278
1929 Auburn 120 Victoria 402
1929 Auburn 120 Cabriolet 402
1929 Auburn 120 Sport Sedan 402
1929 Whippet Sedan 160
1928 Essex Sedan 65
1928 Hudson Coach 30
1928 Auburn 8-88 Sedan 318
1928 Auburn 8-90 Victoria 318
1928 Auburn 6-66 Sport Sedan 160
1928 Auburn 8-77 Sport Sedan 160
1927 Studebaker Victory Commander 180
1927 Gardner 8-cylinder Roadster 160
1926 Auburn 115 Convertible Phaeton 360
1926 Auburn 4-44 Sedan 95
1926 Willys-Knight Sedan 60
PAY BALANCE ON EASY TERMS!
See these values today. Ride without paying a cent for gas for 2,250 miles!
LAWRENCE MOTOR CAR CO.
390 HALSEY STREET, NEWARK, N. J.
N. J. Distributors for Auburn and Cord Motor Cars

AN OFFER of 150 gallons of gasoline with each used car, aided by attractive newspaper advertising, has been successfully used by the Lawrence Motor Car Company of Newark, N. J., state distributor for Auburn and Cord. The advertising listed the cars by year, make and model, with down payment

NEW YORK HEADQUARTERS OF STUDEBAKER CORP. TO MOVE TO LARGER BUILDING

New York, Dec. 18.—Next Monday the branch here of the Studebaker Corporation of America will move from Broadway and 70th Street to new quarters at Broadway and 56th Street.

Two floors of this corner building will be occupied by a new car showroom and executive offices. The building immediately adjacent on 56th Street, four floors will be occupied by the used-car department.

The Broadway building has undergone extensive alterations. It has been given a new stone facing, large display windows have been installed on the street level and on the second floor and the interior has been completely remodeled and redecorated. Complete new lighting equipment has been installed in both the new car and used-car showrooms.

DODGE NEW YORK, INC., SPECIAL TRUCK EXHIBIT

New York, Dec. 18.—William L. Colt, president of Dodge Motors New York, Inc., announces inauguration of a special permanent exhibit of the complete line of Dodge Brothers trucks at their truck headquarters, 125 West End Ave. A special feature of the exhibit is the new line of trucks with payload capacities of from one-half to five and one-half tons.

NASH ADDS 95 DEALERS SINCE INTRODUCTION OF NEW MODELS IN OCTOBER

Kenosha, Wis., Dec. 18.—Nash Motors Company announces that in the two months since the introduction of the new Nash models ninety-five new motor car dealers have come under the Nash merchandising banner.

These new dealers are now functioning as members of the Nash selling organization, located in all parts of the country and in Canada, according to C. H. Bliss, general sales manager of the Nash Motors Company. In addition, there are many new dealer contracts now in the process of completion.

"We credit this significant increase of the Nash merchandising organization to the company's traditional policy of fair policies to both dealers and Nash owners," he said, "as well as to the quality and popularity of the new Twin-Ignition Eight-90, Twin-Ignition Eight-80, Eight-70 and Six-60 series of Nash cars. Organization and merchandising strength of the company is at a very high level, and we anticipate a steady march upward in the year to come as the direct result of Nash man power and Nash manufacturing policy."

SHALLCROSS HONORED

Camden, N. J., Dec. 18.—Watson Shallcross, Dodge and Plymouth dealer here, has been elected a director of the Camden County Chamber of Commerce.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday and Monday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
350 Hudson St., New York, N. Y.
O. J. Elder, President. H. A. Tarantous, Vice-President. Alexander Johnston, Secretary.

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2716 Graybar Bldg., New York, N. Y. Telephone MO hawk 4-6388

Circulation—Net paid Average over 10,000 daily guaranteed.
Member A. B. C.

FRIDAY, DECEMBER 19, 1930

ADVERTISING AND BUSINESS HEADQUARTERS

Harry A. Tarantous, Business Manager. J. Edward Schipper, Eastern Manager.
George M. Slocum, Manager Detroit Bureau, 427-8 Fisher Building, Detroit, Mich., phone Empire 3500; Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill., phone Central 5936; Metz B. Hayes, New England Manager, Little Building, Boston, Mass.; Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash. Address ALL advertising and business correspondence to 2716 Graybar Building, New York City.

EDITORIAL DEPARTMENT

350 Hudson St., New York, N. Y. Telephone CA nal 6-1000.
Alexander Johnston, Editor. William C. Callahan, News Editor.
Detroit Bureau—Chris Sinsabaugh, Editor, 427-8 Fisher Building, Detroit, Mich., phone Empire 3500. Contributing Editor, John C. Wetmore. A. Benson Carleton, Technical Editor.

Mail subscriptions to CIRCULATION DEPARTMENT—C. H. Wilson, Manager.
1926 Broadway, New York, N. Y. Telephone TR afalgar 7-4500
Subscription Rates—One year, $12.00; two years, $20.00, for United States and Canada.
To Foreign Countries—One year, $15.00; two years, $26.00. Single copies, 5 cents.

British Driving Tests

OVER in England they are struggling with a new driving law, among the provisions of which is a standard test, which must be passed by new drivers applying for a first license. This driving test seems fair and with the growing motor traffic on British highways is probably necessary. The provisions of this test are as follows:

1. Start the vehicle from rest, move away in a reasonably short time and maintain a straight course.
2. Turn right and left hand corners correctly.
3. Stop vehicle within a reasonable distance when traveling at various speeds and show that he can brake promptly and effectively.
4. Operate all controls with safety and without moving from the driving seat.
5. Give all recognized signals, whether by hand or by a satisfactory signalling device.
6. Reverse for a reasonable distance, make a left or right hand turn in reverse gear and back the vehicle into an indicated position.
7. Turn vehicle in roadway thirty feet in width.
8. Stop, hold and start the vehicle on a gradient of at least one in fifteen, but not steeper than one in ten.

In the present congested condition of traffic in this country, even more than in England, it is probably not safe for a driver to take out a car unless he has a certain fundamental skill. Any driver fit to negotiate our dense modern traffic should be able to meet the tests suggested above. Our principal objection to testing drivers for fitness to operate is twofold. In the first place such tests, taken as they must be today in large classes, are more or less perfunctory. In the second place the real cause of accidents is not lack of skill, but a reckless streak in the mind of the driver, which seldom operates until he actually has acquired skill. We do not remember an actual case in which a new driver has taken out his car and been involved in an accident through lack of skill in operating it. The real danger comes later, when the operator has acquired the fundamentals of driving skill and his inherent recklessness suggests taking chances.

'Experts' and Experts

RECENTLY we talked with a dealer who had been through a harrowing experience with an alleged "efficiency expert." This dealer is a big time operator, who devotes all his own time to his business. He has been particularly successful and his business bears the mark of his own personality from basement to garret.

Some months ago our dealer friend got the idea that his business needed something more, in spite of its success. He saw that in certain aspects it lacked complete efficiency. He cast about and obtained the services of an alleged efficiency expert. As he expressed it to us: "This guy busted in, upset my whole place and managed to create more waste of time than I ever had in my life. To do anything we had to have four signatures, where one was always enough before. I gave that guy a Christmas present in the shape of a 'get out' order. I'm going to have more business and less efficiency in my shop from now on."

This attitude is understandable, but not wholly justified. There are, heaven knows, thousands of automobile dealers in this country who need efficiency in their businesses and need it badly. There are efficiency experts who can put it there. Unhappily, there are a lot of men masquerading as efficiency experts, who are simply didactic frauds. Before a dealer or any other merchant, for that matter, employs an efficiency man he should be certain that he is the genuine article and not a gentleman wrapped up in forms and an earnest desire to get on a salary list.

ROAD PROGRAM AID TO BUSINESS

A. W. Childs Sees More Car Sales and Added Labor

Continued from Page 1

Mr. Childs pointed out, 47,686 men were employed in September last, while road and street maintenance, locally financed by cities, counties and states, requires many times as much labor.

"Prospects for much larger road programs in 1931 are exceedingly bright," he said. "Bond issues totaling more than a quarter billion dollars were voted by the states in the November elections. The income from gasoline taxes and motor vehicle registration, which amounted to $790,000,000 in 1929, has not been noticeably affected by the industrial depression.

"Practically all of this income is applied to roads, and enables many states to participate in the Federal highway program.

"The annual allotment of $75,000,000 from the Federal Treasury had become so firmly established as a good investment that Congress last spring increased the Federal aid for the next three years by $50,000,000, making a total of $125,000,000 yearly, which will boost the highway expenditures and mileage to new high records.

"This appropriation for 1931 is already being spent by the state highway departments and the funds for 1932 may be made available in advance by congressional action."

Mr. Childs also mentioned the request made of President Hoover's emergency committee by the American Association of State Highway officials for an emergency Federal appropriation of $250,000,000 for highway construction.

He predicted that the St. Louis convention of the road builders will attract 30,000 delegates to hear recommendations for improved highway practices and to view the road show.

COMING EVENTS

DECEMBER

18—Indianapolis, Ind. Society of Automotive Engineers Section meeting.

JANUARY

3-10—New York. National Automobile Show.
5—New York. Rubber Manufacturers' Association convention.
6—New York. National Automobile Chamber of Commerce annual show banquet at Hotel Commodore.
5—New York City. National Automobile Dealers' Association convention.
7-16—East Orange, N. J. Automobile Show of the Oranges and Maplewood.
8—New York City. Society of Automotive Engineers' annual dinner.
10-16—St. Louis, Mo. National Roadbuilders' show and convention.
10-17—Buffalo, N. Y. Automobile Show.
10-17—Milwaukee, Wis. Automobile Show.
10-17—Philadelphia. Automobile Trade Association annual show.
10-17—Newark, N. J. Automobile Show.
11-17—Cincinnati, O. Automobile Show.
13-17—Evansville, Ind. Automobile Show.
17-24—Boston. Automobile Show.
17-24—Detroit, Mich. Annual Show, Convention Hall.
17-24—Hartford, Conn. Automobile Show at state armory.
17-24—Montreal, Can. National Motor Show of Eastern Canada at Stadium.
17-24—Baltimore, Md. Automobile Show.
17-24—Pittsburgh, Pa. Automobile Show.
19-22—Chicago. National Wheel and Rim Association convention at Edgewater Beach Hotel.
19-23—Detroit, Mich. Society of Automotive Engineers' annual meeting.
19-24—Omaha, Neb. Automobile Show.
19-24—Elmira, N. Y. Automobile Show at Armory.
19-24—Omaha, Neb. Automobile Show.
19-24—Louisville, Ky. Automobile Show.
19-24—Rochester, N. Y. Automobile Show.
24-31—Chicago, Ill. National Automobile Show.
24-31—Altoona, Pa. Automobile Show at Jaffa Shrine Mosque.
24-31—Allentown, Pa. Automobile Show sponsored by Lehigh Automobile Trade Association.
24-31—Cleveland. Automobile Show.
24-31—Washington, D. C. Automobile Show
24-31—Albany, N. Y. Automobile Show.
24-Feb. 1—Los Angeles. Automobile Show.
26-27—Chicago. National Automobile Dealers' Association convention.
26-31—Springfield, Mass. Automobile Show.
26-31—Syracuse, N. Y. Automobile Show at Armory.
26-31—Portland, Maine. Automobile Show at Exposition Building.
31-Feb. 7—San Francisco. Automobile Show.

FEBRUARY

Jan. 31—Feb. 7—Twin Cities. Northwest Automobile Show, jointly sponsored by St. Paul and Minneapolis at the Minnesota State Fair Grounds.
2- 7—Scranton, Pa. Automobile Show.
2- 7—St. Louis. Automobile Show.
3—Minneapolis. Auto Trade Association convention.
7-14—Los Angeles. Automobile Salon.
7-14—Kansas City. Automobile Show.
9-14—St. Petersburg, Fla. Automobile Show at Winter Garden.
9-14—Denver, Colo. Automobile Show.
11-13—Chicago, Ill. American Society of Mechanical Engineers' fuel meeting.
14-19—Indianapolis. Automobile Show at State Fairground.
16-20—San Francisco. Society for Steel Treating National Western Metal and Machinery Exposition.
21-28—San Francisco. Automobile Salon.
21-28—Quebec, Canada. Automobile Show.
22-March 1.—Los Angeles. Pacific Coast Transportation. Exposition at Shreve Civic Auditorium.
23-28—Des Moines, Ia. Automobile Show at Coliseum.
24-March 1—Seattle, Wash. Automobile Show at Civic Auditorium.
25-March 2.—Camden, N. J. Automobile Show.

MARCH

6-15—Geneva, Switzerland. Eighth Swiss International Automobile Show.
7-14—Brooklyn, N. Y. Automobile Show.

MAY

4- 9—Charlotte, N. C. Good Roads Convention.
9-Aug. 9—Berlin, Germany. International Garage Exposition.

Contemporary Comment

FURTHER expansion of forward contracting is the significant feature of the current situation in iron and steel. While buyers are still extremely conservative in estimating their requirements in coming months and lean to the view that business activity will show gradual, rather than sharp recovery, there is increasing evidence of their belief that the market is scraping bottom and that the next major change in the price trend will be upward.

Pig iron contracting has continued active at Chicago and New York, where melters have covered 60 per cent. of their first quarter needs, and has shown improvement at Cleveland, where bookings of the week total 22,000 tons. Considerable tonnage also has been placed for the entire first half of 1931, and in a few cases protection throughout 1931 has been asked. The American Radiator and Standard Sanitary Corporation, which last month bought 50,000 tons of pig iron, has made additional purchases which raise its total contract commitments to 75,000 tons. A large automobile maker is trying to contract for its castings at present prices until the end of the third quarter, while an automotive foundry unsuccessfully attempted to buy its entire 1931 coke requirements at the current market.

Sheet contracting is in impressive volume and at Chicago is described as the heaviest in fifteen months. It

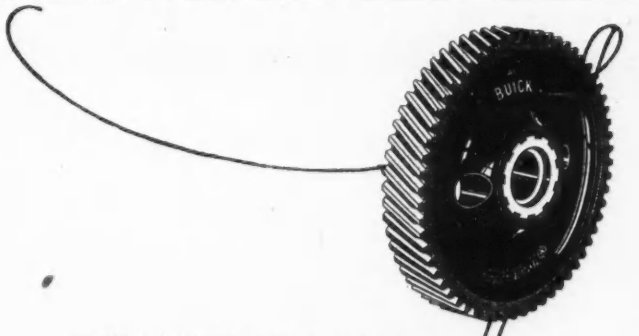
(Continued on page 12)

CLEVELAND EMPLOYMENT SCHEDULED TO INCREASE

Cleveland, Dec. 18.—Employment in this city is scheduled to take an upturn immediately after the first of the year, according to a survey made by the Industrial Employment Committee.

The committee, after making a poll of 500 widely diversified plants, summarized the outlook for future operations as follows:

"Forty per cent. are looking forward to a definite employment increase, 50 per cent. to a static condition and 10 per cent. to a decrease."



TEXTOLITE
TIMING GEARS

Those Days Are Gone!

It is difficult to believe that the quiet, trouble-free application of the nonmetallic timing gear of to-day had its inception in the old crank and generator shaft applications.

Times have changed!

It takes a trained ear with a stethoscope to hear one of the modern Textolite camshaft applications. And—as for service! Our records show an average life of more than 50,000 miles, and in many cases, 100,000 miles.

830-77

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING, ON A NATION-WIDE N. B. C. NETWORK

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

Why the Aviator Flew Through The Fog

New York Show Issues

Publication Dates	*Advertising Forms Close*
January 3	December 31
January 5	January 2
January 6	January 3
January 7	January 5
January 8	January 6
January 9	January 7

Chicago Show Issues

Publication Dates	*Advertising Forms Close*
January 24	January 22
January 26	January 23
January 27	January 24
January 28	January 26
January 29	January 27
January 30	January 28

No Increase in Rates

DISTRIBUTION OF ALL SHOW ISSUES WILL TOTAL OVER 300,000, INCLUDING:

55,000 Car and truck wholesalers and retailers.

3,000 Jobbers of accessories, parts and shop equipment.

7,000 Factory executives, including Presidents, vice-presidents, service managers, engineers, etc.

4,000 Bus operators, including bus fleet owners, having ten or more units.

5,000 Truck fleet owners operating large and small fleets.

33,000 Service stations, garages, gasoline chains and specialty shops.

73,000 at show booths, hotels, dealer meetings, conventions, etc.

The flyer knew beforehand that the fog bank was only five miles wide. He received a weather report that told him that he could safely fly through the fog, because on the other side there was bright sunshine and clear visibility.

Automotive manufacturers can definitely know what is ahead by the response they get from trade and public during the New York and Chicago shows.

Advertisers should start a week or two before each national show with a comprehensive sales campaign to attract the trade to their lines. This campaign should continue during the shows, and then manufacturers will know what to do after the shows.

No advertising is so effective and so economical as that which is run when interest in new lines and improved lines is so intense as it is at show time.

Leaders in all branches of the industry used the show issues of Automotive Daily News in years past, and they will use the show issues of 1931.

Will you be among the leaders in 1931?

Automotive Daily News

H. A. TARANTOUS, Bus. Mgr. GRAYBAR BUILDING, NEW YORK CITY

WESTERN OFFICE
Willard R. Cotton, Mgr.
333 No. Michigan Ave.
Chicago, Ill.

DETROIT OFFICE
Geo. M. Slocum, Mgr.
Fisher Building
Detroit, Mich.

EASTERN OFFICE
J. Edward Schipper, Mgr.
Graybar Building
New York City

News of Activities in the Truck and Bus Field

General Motors Truck Co. Cuts Prices $50 to $150

Continued from Page 1

factory price and capacity guarantees in the G. M. P. line are as follows:—

Fifty dollars reduction on Model T-15 (3 types), which was $695, with capacity ranges from ¾-ton to 1-ton.

Seventy dollars reduction on Model T-17 (8 types), which was $745.

One hundred and fifty dollars reduction on Model T-19 (19 types), which was $895.

Increases of from 500 to 3,500 pounds in guaranteed straight rating capacity (total gross weight including pay load) on models formerly in the 1½-ton, 2-ton, 2½-ton, 3-ton, 3½-ton and 4-ton ranges.

CLANCY TO HEAD DODGE TRUCK SALES IN DETROIT

Detroit, Dec. 18.—The appointment of Walter F. Clancy as regional truck representative for the Detroit region is announced today by Dodge Brothers Corporation. In his new position, Mr. Clancy will have jurisdiction over Dodge truck sales matters in this region and will supervise the operations of truck sales representatives. Mr. Clancy has had long experience in the truck business and with the Dodge truck organization. He is particularly well known to Dodge dealers in this region.

NEW G. M. C. TRUCK DEALER AT FORT WORTH

Fort Worth, Tex., Dec. 18.—The Hartnett G. M. C. Truck Company is the new General Motors truck dealer here and distributor for west Texas. The company is headed by Leo J. Hartnett, former G. M. C. truck dealer at Abilene, Tex., and J. P. Hartnett of Weatherford is vice-president. The company has display and service quarters at 705 North Main St.

NEW FREIGHT LINE

Thomasville, Ga., Dec. 18.—The Atlantic Coast Highway Express, a freight carrying trunk line that will operate between Thomasville and Jacksonville via Waycross, made the initial trip Monday. The corporation was recently chartered and headquarters will be maintained in this city.

NAMED SALES MANAGER

Rochester, N. Y., Dec. 18.—Frederick Beelby, for twenty-one years associated with the automobile industry, has been appointed sales manager of the Burch Chevrolet Company here.

They make the selling job easier, whether it's trucks or buses. . . .

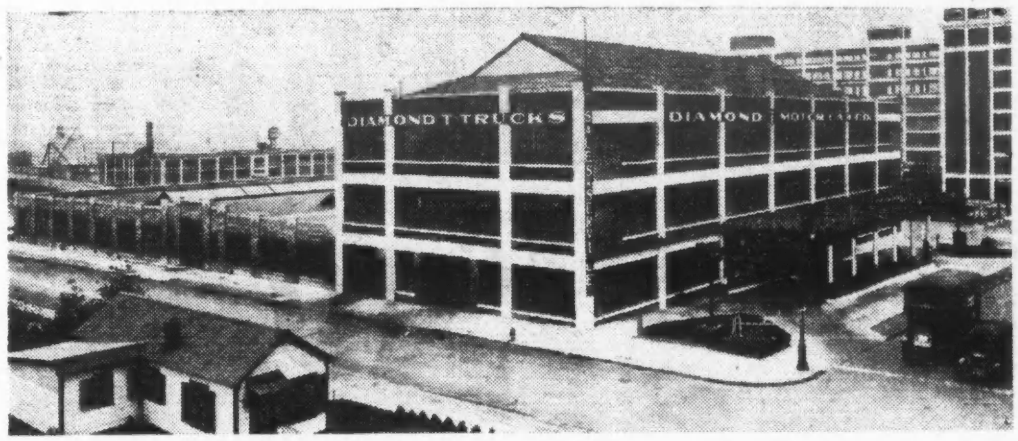
In sturdiness, efficiency, and accessibility they answer all questions about axles. . . .

WISCONSIN AXLES

WISCONSIN AXLE CO.

Oshkosh Wisconsin

New Diamond-T Branch in New York



• A NEW SALES AND SERVICE BRANCH of the Diamond-T Motor Company, Chicago, was opened this week at Queens Boulevard and 33d Street, Long Island City. A description of the new building appeared in Automotive Daily News yesterday

G. M. PLANS TRUCK BODY ASSEMBLY IN OKLAHOMA CITY

Oklahoma City, Dec. 18.—Enlargement of General Motors Corporation activities in the Southwest, particularly in Oklahoma, is indicated by reports that the corporation will establish an assembly plant here for its new commercial body division.

This organization is known as the commercial body division of Chevrolet Motor Company, with central offices in Indianapolis. The plant will assemble and mount on the chassis commercial bodies, school buses and other types of light vehicles of a commercial nature.

The plant will be located on Santa Fe Railroad trackage. Oklahoma City already is the wholesale center for this region for Chevrolet, Buick and other General Motors' products, including electric refrigerators. District offices of the General Motors Acceptance Corporation also are located here.

HONORED BY KIWANIS

Port Angeles, Wash., Dec. 18.—Clay Wolverton, veteran Port Angeles motor bus operator, has been chosen treasurer of the Port Angeles Kiwanis Club for 1931.

In the Bus Field

INTERSTATE TRAFFIC LINE

Richmond, Va., Dec. 18.—J. A. Towns, trading as Shenandoah Stages, was authorized by the State Corporation Commission to operate passenger bus service for interstate traffic only between Bristol and the District of Columbia line, with Knoxville and Washington as the terminal, and between Winchester and the West Virginia line, with Chambersburg, Pa., as destination.

NEW LINE IN ALABAMA

Birmingham, Ala., Dec. 18 (UTPS).—The Hoover Motor Express Company, Inc., of Memphis, has applied to the Alabama Public Service Commission for permission to operate a freight truck line between Alabama-Mississippi and Alabama-Georgia state lines en route to Atlanta and Memphis. The line would run by way of Sheffield, Athens, Huntsville and Gadsden, Ala.

NEW LINE FROM PATERSON

Paterson, N. J., Dec. 18.—The Board of Works here has given consent to the establishment of a new bus route between Paterson and Mountainview.

LIVE STOCK HAULAGE BY TRUCK EXCEEDS RAIL SHIPMENTS

Kansas City, Dec. 18.—November receipts of hogs in Kansas City included 75,115 head brought in by motor trucks and 64,037 hogs by the railroads. October was the first month in history that witnessed larger receipts through trucks than through railroad deliveries.

The November hog receipts by motor trucks included 54 per cent, of the total, against only 41 per cent, a year ago, reflecting the wider use of trucks.

While aggregate receipts of all live stock by railroads in November on the Kansas City market fell off 74,208 head from a year ago, the arrivals by motor trucks increased 4,799 head over November, 1929, to 112,926 head.

TO HANDLE FORDSON

Atlanta, Ga., Dec. 18.—Southern Iron and Equipment Company of Atlanta has been appointed distributor for Fordson tractors in the southeastern states, including Georgia, Florida, Alabama and part of Tennessee.

Cumulative New Commercial Car Registration Statistics, November, 1930

Returns for today: Montana, New Hampshire, West Virginia and the District of Columbia.

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Essex	F. W. D.	Fargo	Federal	Ford	G. M. C.	International	Mack	Paige	Relay	Reo	Republic	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Arkansas			24		3					40	1	6											1				75	Arkansas
Delaware	1		10	3		1				34	2	3	2			1					2	1					60	Delaware
Florida		1	88		7				5	304	5	11		1		1		1					2	1			427	Florida
Illinois	4		240	34	61				13	385	5	44	7		2	4		3	2				2	4		23	833	Illinois
Minn.		1	127	6	27		1		2	261	10	47				5		1			11	4	1	3		8	515	Minnesota
Montana			13		5			1	1	43		10		1		1		1				1	1	3		1	82	Montana
N. Hamp.		1	22		3					81		1	1			1				1	2				1		114	New Hamp.
Nor. Dak.			13		3			1		20		13				1					1						52	Nor. Dak.
So. Car.			107		6			1		84	5	6				1							1			2	213	S. Carolina
Utah			32		13					87	2	11				3		1			1						150	Utah
Wash'ton			26		3					83	1	7				1					2		2	1		1	127	Wash'ton
West Va.			60	2	22					125	3	15	1	1	2	3	2				2	1	2	6			247	West Va.
Wisconsin			164	4	23			1	5	310	8	35	1	1		5		2	2		7	3	1	2		5	579	Wisconsin
D. of Col.	7		28	5	4					97	5	5	2		1	2							4			3	163	D. of Col.
Totals	12	3	954	54	180	1	1	4	26	1954	47	214	14	4	5	29	2	9	4	1	28	10	17	20	1	43	3637	Totals
Ark., 1929			252	1	7			1		302	1	23	1		1	7						8	2			2	608	Ark., '29
Del., 1929		3	19		4			1		38	2	2															69	Del., 1929
Fla., 1929		2	163		11	3				247	1	9	1			5						3	2				447	Fla., 1929
Ill., 1929	3	2	173	20	59	1		10	5	620	31	68	6			30				3		16	12			95	1154	Ill., 1929
Minn., '29			197	3	28	2		6	1	369	9	74				16					2	18	5		2	7	739	Minn., '29
Mont., '29	3		34		10			4	1	49	1	12										2	2			1	119	Mont., '29
N. H., '29		1	37	1	6				2	86	5	8	1			5		1		1		1				2	157	N. H., 1929
N. D., '29			44		6			1		61	1	19				1		1				5					139	N. D., 1929
S. C., 1929			137		7			4	1	130	7	7				1					1	1	1			2	299	S. C., 1929
Utah, 1929			32		4			1		117	6	5				4		1					2			1	173	Utah, '29
Wash., '29			57		8	2		2		153	5	7	4			4		2			1	1	4			4	254	Wash., '29
W. V., '29		5	80	2	29	1		2		135	9	12	1		1	4	1			1		3			1	2	289	W. V., '29
Wis., 1929			157	6	19	4		2	2	276	6	27	2			7			1	4	4	16	6			10	549	Wis., 1929
D. C., '29	14		19	2	5	1		1		95	9	4	1		1	3		1	1				5			8	170	D. C., '29
Totals	20	13	1401	35	203	14	†	35	12	2678	93	277	17	*	3	87	1	6	2	9	8	74	41	*	3	134	5166	Totals

*Not in production at that time. †Carried in miscellaneous column.

Swope Explains G. E. Plan To Relieve Unemployed

Schenectady, N. Y., Oct. 18.—For many years the General Electric Company of Schenectady, N. Y., has made a definite study of methods of improving the condition of its employees. It has life insurance plans, home owning plans and saving plans, including a pension system to provide for old age.

"For some years also, the company has been experimenting with methods of stabilizing employment. In some departments this was easy. Work could be spread out over the entire year, while the products manufactured in the slack buying seasons could be stored for use during the peak period. In other departments stabilization is more difficult, but even here workmen can be put to making parts during slack times. However, General Electric is still endeavoring to find some method by which unemployment can be mitigated. In a radio talk last night, Gerard Swope, president of General Electric, gave an interesting outline of what his company is doing in this particular, from which we quote in part:

"No one company," said Mr. Swope, "is able to grapple effectively with this problem of cyclical variations in business, so that the best that can be done is to have a plan which will ameliorate the hardships when they do arise. Five years ago a plan of unemployment pensions, loans and relief was offered, but at that time the employees considered unemployment remote, and it was not accepted. This year it was again proposed and received immediate acceptance.

"Fundamental in this new plan for relief are the following principles:

"1. Joint and equal contributions by employees and the company.

"2. Joint participation in the administration of the plan.

"3. Aid through group action to those workers who are in need or require temporary loans, or who become unemployed, or for whom only part-time work is available.

"4. In times of unemployment emergency, co-operation and assistance from those employees of the company not usually affected by unemployment and assistance by the company in equal amount.

"The plan is adopted by each works as a unit, by a majority vote of eligible employees. It has now been adopted or is being considered by the employees of all works. It is of further interest that the plan is quite generally favored by departments which are not usually subject to layoff in periods of unemployment and whose members would not make normal contributions to the fund, but would contribute during the unemployment emergencies.

"This plan is not final in form or in substance and may be modified by joint action of the employees and the company. It is an interesting experiment in which the company is glad to join its employees, first, in endeavoring to find a solution, and, second, in ameliorating the tragic effects of unemployment on particular employees, who are in no sense responsible for their unemployment.

"Under the original provisions of this plan as announced last June, no employee was eligible for unemployment benefits under it unless he had made payments of 1 per cent. of wages into the fund for a period of six months. This limitation would have delayed initial payments in the earliest instance until next February. In the light of the emergency now existing the payment of benefits and the extension of loans to unemployed workers were commenced December 1, and the company is sincerely gratified that it has found this step possible as a means of alleviating the condition of those for whom no work is available. Benefit payments now consist of 50 per cent. of the wages of those entirely unemployed or a smaller amount sufficient to afford 50 per cent. of the normal wages to those on less than half-time employment. Loans are being made in those urgent cases where the company feels that the real distress otherwise arising must be obviated."

CHAIN BELT PRESIDENT SEES BUSINESS GAINING

Milwaukee, Wis., Dec. 18.—C. R. Messinger, president of the Chain Belt Company, believes a marked improvement in business conditions over the present year will be shown in 1931.

"I believe the recovery will be a gradual one, similar to that during the 1921 period and the improvement in 1931 will be a good start toward a return to normal," he said.

Mr. Messinger will become president of the Oliver Farm Equipment Company January 1, and it is rumored tha he will become chairman of the board for the Chain Belt firm, with C. F. Messinger assuming the presidency of the concern.

E. W. FULTON TO HEAD INTERNATIONAL NU-TYP

Oswego, N. Y., Dec. 18.—E. W. Fulton, former works manager and vice-president of the International Nu-Typ Tool Corporation of this city, was elected president and general manager of the corporation at a meeting of stockholders here. He will succeed H. W. Stone, who has become president of the David Maydole Hammer Company of Norwich, N. Y. The resignation of E. B. Russell as treasurer and sales manager of the company was also accepted.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Cumulative New Passenger Car Registration Statistics, Nov., '30

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Readers desiring county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies.

Some of this data has been published previously, but it is given here complete for the convenience of our subscribers.

Returns for today: Montana, New Hampshire, Rhode Island and South Dakota.

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	DeSoto	Dodge	Durant	Essex	Ford	Franklin	Gardner	Graham	Hudson	Hupmobile	Jordan	La Salle	Lincoln
Arkansas			9	5	119	6		7	14	3	1	213			2	1	2			
Delaware	1	1	24	8	60	15		3	2	2	3	114	1			1	2		4	
Florida	6	21	78	10	217	34	1	8	20	5	18	622	6		28	16	4		4	
Illinois	25	8	235	61	791	116	8	71	156	21	137	1445	41	1	63	50	38		38	22
Maryland	2	1	70	6	338	24		9	28	14	21	438	7		15	7	12		6	
Minnesota	1	5	110	8	644	62		12	45	7	20	682		1	27	9	23		5	1
Montana			11		60	5		2	8	2	6	73			1	5			1	1
N. Hamp.	2		23	3	54	8		7	6	4	14	147	10		5	3	1		2	
N. Dakota		1	9		113	7		1	9	4	4	103			1	1	1			1
Rho. Isl.	2	5	33	6	76	34	1	18	16	7	13	201	7		3	6	8		4	4
S. Ca'lina		3	45		275	17		8	15		7	417			1	5	4		1	1
S. Dak.	1	1	25		187	14			21	9	7	204			2	5	12			
Utah	4		31	1	92	4		4	8	11	14	127	3		10	3				
Wash.	2	6	53	7	148	14		4	13	8	24	289	1		6	3	3		2	
West Va.	6	3	27	3	262	20		11	35	3	24	362	2		14	7	1		3	
Wisconsin	2	5	92	10	362	33	1	12	46	7	26	469	2		16	10	6	1	10	
Totals	54	60	875	128	3798	413	11	177	442	107	339	5906	80	2	194	132	117	1	80	32
Ark., '29			42	5	585	27		28	67	14	28	1031			10	6	12		3	2
Dela., '29	3		19	7	84	4			3	3	12	174	2		1	2	3		8	
Fla., '29	6		110	9	526	45	2	20	38	6	82	1033	10		39	31	36		12	4
Ill., '29	26		484	97	1233	211	25	135	497	63	490	2529	43		103	238	156	5	126	24
Md., '29	3		112	9	530	54	2	45	92	20	113	787	8		33	34	37	3	22	4
Minn., '29	6		98	9	867	81	4	36	67	82	105	1376	3	5	52	33	44		11	4
Mont., '29	2		12	1	84	8		2	17	9	14	100	4		2	2	3		1	
N. H., '29	1		38	2	120	14		18	13	19	24	184	5		11	8	5	2	5	
N. D., '29	1		15	1	153	8		9	20	6	12	307			8	4	1		2	1
R. I., '29	6		79	8	128	59	1	46	42	16	38	227	6		25	7	16		18	1
S. C., '29			47	1	661	26		15	27	4	30	997	1		3	14	15	1	6	
S. D., '29	1		38		326	20		4	45	13	28	421			13	10	24		1	
Utah, '29	4		22	4	171	10		12	14	24	24	319	3		9	15	10		2	1
Wash., '29	9		79	7	354	47	6	44	44	52	77	701	2		25	22	30		9	2
W. Va., '29	5		51	3	400	45		27	72	9	69	631	2	2	22	13	19		10	1
Wis., '29	4		145	10	669	52	1	48	192	33	175	1127	7		27	78	18	1	11	
Totals,'29	77	*	1391	173	6891	711	41	489	1250	373	1321	11944	96	7	383	517	429	12	247	44

States	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Arkansas		3	3	2	1			15	7		5			2	1			421
Delaware		2	4		9			7	6	2	6		1				1	280
Florida	8	26	7	11	12		3	35	30	12	18			5	11	1		1,278
Illinois	21	213	31	116	128	6	20	105	94	43	205	5	17	21	33	26	7	4,418
Maryland	3	40	13	9	23	16	3	39	34	12	41			9	11	9	3	1,263
Minnesota	7	56	10	18	21	2	4	97	50	19	45		2	27	41	16		2,077
Montana	3	3	1	3			1	6	3	1	2			9	2			209
N. Hamp.	4	27	3	9	7		2	17	10	10	3		1	2	5	1		390
N. Dakota		8	3	3	1			13	10		1		2	5	9			310
Rho. Isl.		27	2	10	13	1	9	10	19	27	20			2	9	6		599
S. Ca'lina	2	2	2	3	5			15	9	2	9			4	3			853
S. Dak.	2	8	2	18	2			24	10	4	12		2	11	9	1		593
Utah	1	18	3	3	1		2	6	9	3	4	2	1	3	3			371
Wash.	6	11	6	6	10			21	21	8	29			3	32	11		747
West. Va.	11	43	7	12	4		1	34	19	10	17		3	11	16	8		979
Wisconsin	6	106	23	22	12	1	4	49	62	12	66		4	4	50	2	4	1,537
Totals	74	593	120	245	249	26	49	493	393	165	483	7	33	118	235	81	15	16,327
Ark., '29	2	34	5	6	5		2	51	35	4	8			37		10		2,059
Dela., '29		16	6	5	7		1	7	12		6			9		2	9	405
Fla., '29	7	27	25	30	25	1	3	31	54	10	16	1	3	36		6		2,284
Ill., '29	50	283	82	213	179	14	22	165	266	49	184	18	14	122		37	15	8,196
Md., '29	8	64	14	40	33	7	4	40	80	19	33	6	1	43		13		2,313
Minn., '29	10	61	23	46	28	4	7	113	110	7	58	5	3	118		18	3	3,497
Mont., '29	2	9	5	1		2		19	2	2	11			12		4		330
N. H., '29	5	34	5	14	10			16	24	10	8			16		9	1	621
N. D., '29	2	9	6	10				28	20		1		1	30		5	1	661
R. I., '29	9	39	11	24	19	9	14	33	39	20	28	2	1	27		9	3	1,010
S. C., '29	11	11	4	15	4			32	32	1	17		1	11				1,987
S. D., '29	1	21	6	37	3			48	27	3	18		3	42		5		1,158
Utah, '29	2	19	2	12	4			13	17		5	3		12		2		73*
Wash., '29	5	26	14	40	15		1	53	37	5	41		1	22		22	1	1,793
W. Va., '29	17	40	10	29	9		1	30	39	4	18	6		34		5		1,623
Wis., '29	4	142	46	60	18	4	11	68	121	16	67	2	4	72		7	6	3,246
Totals,'29	135	835	264	582	359	41	66	747	915	150	519	43	32	643	*	154	39	31,920

*Not in production at that time. Windsor is now included in the Miscellaneous Column.

Personal Briefs

CHARLES W. OATHOUT DIES AT NEWARK

Newark, N. J., Dec. 18.—Charles White Oathout, retired automobile dealer, died at the Newark Memorial Hospital after an operation. He was 61 years old and lived in West Orange. He was a member of the Newark Athletic Club, the Deal Golf Club, the Forest Hills Golf Club and Hope Lodge, F. and A. M., of East Orange.

WALTER R. JANERY JOINS CADILLAC FACTORY BRANCH

Chicago, Dec. 18.—Walter R. Janery, for nearly six years manager of the employment department of the Chicago Automobile Trade Association, has resigned to become associated with the factory branch of the Cadillac Motor Car Company as assistant service manager.

SIDNEY SCHNITMAN WITH RIVERSIDE SERVICE CORP.

Buffalo, N. Y., Dec. 18.—Sidney Schnitman, who has served for several years as wholesale manager for the John J. Gibson Company, Hupmobile distributor here, has been appointed general manager of the Riverside Service Corporation, Hupmobile dealer.

JOSEPH WOODWELL COMPANY NAMES VICE-PRESIDENT

Pittsburgh, Pa., Dec. 18.—Announcement was made by the Joseph Woodwell Company, automobile supplies distributor here, that J. Knowles Woodwell has succeeded to the vice-presidency of the company through the death of James D. Hailman, former vice-president.

CONNECTICUT HUPP. CO. ELECTS E. H. DIECKHOFF

Hartford, Conn., Dec. 18.—E. H. Dieckhoff has been elected vice-president and treasurer of the Connecticut Hupmobile Company.

Service Notes

CARR OIL CO. CHARTERED

Haddonfield, N. J., Dec. 18.—Carr Oil Company, 280 Jefferson Ave., to take over the business now carried on at 1932-34-36 North Reese St., Philadelphia, operated by Edmund Keading, manufacturing and selling petroleum, gasoline and oil, has been chartered, with an authorized capital stock of $125,000. Edward Keading, Mount Laurel township, Burlington county; George P. N. Carr, Haddon Heights; Carleton B. Webb, Haddonfield, are the directors.

BUYS SERVICE STATION

Columbia, S. C., Dec. 18.—The Barnett Tire and Battery Company has purchased a service station at 1221 Sumter St., which was formerly owned by Capitol Motors, according to an announcement by W. D. Barnett, president of the tire and battery concern.

NEW SERVICE STATION

Buffalo, N. Y., Dec. 18.—The Seventh Street Service Station, featuring a complete line of accessories and equipment for automotive service, has been established at 121-125 7th St., here, under the management of Antonio Sciolino and Philip Ansoloma.

NEW S. O. STATION

Camden, N. J., Dec. 18.—A contract for the erection of a service station at 4th Street and Kaighn Avenue has been awarded the Prince Concrete Company, Camden. The station is being built for the Standard Oil Company of New Jersey. It will be of brick and steel, 18x20 feet, with a tile roof and cement floors.

BUILDING BATTERY SHOP

Newark, Dec. 18.—The West Side Battery Company is erecting a new battery shop at 337-9 Jelliff Ave., this city.

ADDS ELECTRICAL EQUIPMENT

Vancouver, Wash., Dec. 18.—The DuBois Motor Company, Clark county Chrysler dealer, has just completed installation of complete new electrical equipment in the service department of its large one-stop garage, according to R. DuBois, manager. The company also has received a large stock of Exide batteries and hereafter will represent this line of batteries in this territory.

Major Specifications and Mechanical Details of 1930 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyls.	Bore and Stroke	Tax H P.	Max. Brake H. P. at Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
*Am La France Chief	2	3650	Own	6	3¾x5	33.0	65@2100	Pw	Str	Vac	DR	Own	C	4	Tim	Wo	31.2	4	D	156	6200	32x6	32x6D
Am. La France W	3-4	3950	Own 2 R	4	4¼x6	28.9	42@1400	CS	Zen	Vac	AB	Own	C	4	Own	2R	47.4	4	R	160	7200	S36x5	S36x5D
*Am. La Fr. Chieft'n	3-4	5500	Own	6	4½x5⅛	40.8	75@1800	Pw	Zen	Vac	DR	Own	C	4	Tim	Wo	28.8	4	D	175	7200	S36x8	36x8D
Am. La France V	5	5500	Own 5 R	4	4¾x6	36.2	50@1200	CS	Zen	Vac	AB	Own	C	4	Own	Wo	54.4	4	R	165	9800	S36x5	S40x6D
Am. La Fr. Big Chief	6	6725	Own	6	4½x6	48.6	50@1200	Pw	Zen	Vac	DR	Own	C	4	Own	3R	32.8	4W	D	226	10600	S40x8	S40x8D
Am. La France U	7½	6000	Own 5 R	4	4¾x6	36.2	50@1200	CS	Zen	Vac	AB	Own	C	4	Own	—	63.5	4	R	165	10500	S36x7	S40x8D
Austin	—	475	Own	4	2.2x3	7.8	———	CS	Til	—	Aut	W-G	U	3	Sel	Sp	—	4	4	75	———	3 75x18	3.75x18
Autocar A	1½-2	3200	Own	6	4 x4¾	38.4	82@2400	Pw	Str	Vac	DR	Br-L 51	U	4	Own	Sp	27.9	4V	R	150	5060	34x7	34x7
Autocar D	2-2½	3500	Own	6	4 x4¾	38.4	82@2400	Pw	Str	Vac	DR	Br-L 51	U	4	Own	2R	33.7	4V	R	150	5300	34x7	34x7D
*Autocar SH	2½-3	4300	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Gra	DR	Own T	U	4	Own	2R	44.3	RV	R	114	6770	34x7	34x7D
Autocar SCH	2½-3	4300	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	4	Own	2R	44.3	RV	D	157	6860	34x7	34x7D
*Autocar H	3	4100	Own	4	4½x5½	32.4	45@1450	CS	Str	Gra	DR	Own T	U	4	Own	2R	48.6	RV	R	114	6770	34x7	34x7D
*Autocar HS	3½	4600	Own	4	4½x5½	32.4	45@1450	CS	Str	Gra	DR	Own T	U	4	Own	2R	53.6	RV	R	114	7900	40x8	40x8D
*Autocar SHS	3-3½	4800	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Gra	DR	Own T	U	4	Own	2R	65.3	RV	R	114	7900	40x8	40x8D
*Autocar SCHS	3-3½	4800	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	4	Own	2R	53.6	RV	D	157	8180	40x8	40x8D
Autocar TEA	3-3½	5350	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	12	Own	2R	101.7	4V	D	192	8900	36x8	36x8D
Autocar TFA	3½-5	6100	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own T	U	12	Own	2R	101.3	4V	D	192	9300	38x9	38x9D
Autocar C	3½-5	5500	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own B	C	4	Own	2R	61.7	RV	D	172	9500	42x9	42x9D
Autocar CG	5	8250	Own	6	4½x4¾	48.6		Pw	Str	Vac	DR	Own B	C	12	Tim	—	120	WB	D	196	13000	36x8	36x8B
Autocar F	7½	6800	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Br-L 70	C	7	Tim	Wo	94.0	4V	D	173	11000	36x7S	40x8DS
Autocar G	10	9000	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Br-L 70	C	7	Tim	Wo	97.7	WB	D	171	13000	36x8	36x8D
Brockway 60	1	995	Con	6	3⅜x4	27.3	61@3000	Pb	Zen	P	Aut	W-G	U	3	Col	Sp	—	4	Tr	132	3200	30x5	30x5
Brockway 65	1	1195	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Zen	Vac	Aut	Br-L	U	3	Col	Sp	—	4	Tr	137	3400	30x5	30x5
Brockway 75	1¼	1290	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	—	4	Tr	137	3450	32x6	32x6
Brockway 90	1½	1525	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	—	4	Tr	149	3650	32x6	32x6
Brockway 120	2	1990	Con	6	4 x4½	38.4	73@2400	Pb	Zen	P	Aut	Br-L	U	4	Tim	Sp	—	4	Tr	156	5200	32x6	32x6D
Brockway 140	2-2½	2495	Con	6	4 x4½	38.4	73@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	156	5500	32x6	32x6D
Brockway 141	2½	2935	Con	6	4 x4½	38.4	73@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	6200	32x6	32x6D
Brockway 170	2½	3160	Con	6	4½x4¾	40.8	89@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	6800	32x6	32x6D
Brockway 175	3	3660	Con	6	4⅝x4¾	45.9	100@2400	Pb	Zen	P	Aut	—	U	5	Wis	2R	—	4HV	D	170	7200	34x7	34x7D
Brockway 195	3-3½	3820	Con	6	4½x4¾	40.8	85@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	7500	34x7	34x7D
Brockway 190	3	4185	Con	6	4½x4¾	40.8	89@2400	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	RV	D	168½	7625	34x7	34x7D
Brockway 220	3½-4	4568	Con	6	4⅝x4¾	45.9	112@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	8200	36x8	36x8D
Brockway 250	5	5950	Con	6	4⅝x4¾	45.9	100@2400	Pb	Zen	P	Aut	Br-L	U	4	Tim	Wo	—	4Hmv	D	182	10000	40x8	40x8D
Brockway 290	7½	7250	Con	6	4¾x5¾	54.15	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	—	4W	D	182	10750	38x7P	40x14S
*Brockway 610	10	9700	Con	6	4¾x5¾	54.15	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	—	4W	D	212	14000	38x7P	36x10S
Chevrolet	¾	355	Own	6	3⅛x3¾	26.3	———	CS	Car	P	DR	Own	U	3	Own	Sp	13.61	4	R	109	1835	4.75x19	4.75x19
Chevrolet	1½	590	Own	6	3⅛x3¾	26.13	———	CS	Car	P	DR	Own	U	4	Own	Sp	33.46	4	R	157	2890	30x5	30x5D
Chevrolet	1½	520	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	4	Own	Sp	33.46	4	R	131	2375	30x5	30x5
Commerce Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	P30x5	P30x5
Commerce Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	P30x5	DP30x5
Commerce Series 40	1½	2990	Bud H S 6	6	3⅜x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	P34x5	DP34x5
Commerce Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4500	32x6	D32x6
Commerce Series 40	2	3240	Bud D S 6	6	3⅜x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	32x6	D36x6
Commerce Series 40	2½	3240	Bud D S 6	6	3⅜x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	5100	36x6P	36x6D
Commerce Series 60	2½	4580	Bud B A 6	6	4⅛x5⅛	40.8	73@2000	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7000	36x6P	36x6D
Commerce Series 60	3	4680	Bud B A 6	6	4⅛x5⅛	40.8	73@2000	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7100	36x6P	38x7D
Commerce Series 80	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	85@2400	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	B	D	175	8200	36x6S	36x12S
Commerce Series 80	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	B	D	175	8400	36x6S	36x14S
Commerce Series 100	5	5830	Bud B A 6	6	4⅛x5⅛	40.8	85@2400	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	95.0	B	D	175	9300	36x6S	40x14S
Day Elder 60	1	1195	Con 25 A	6	3⅜x4	27.3	61@3000	Pw	Zen	P	DR	W-G	U	4	Tim	Sp	36.3	4	4	135	3200	20x6.00B	20x6.50B
Day Elder 85	1½	1645	Con 16 C	6	3⅜x4⅝	27.3	65@2700	Pw	Zen	P	DR	W-G	U	4	Tim	Sp	42.3	4	4	135	3750	20x6.00B	20x6.50DB
Day Elder 110	2	2095	Con 16 C	6	3⅜x4⅝	27.3	65@2700	Pw	Zen	P	DR	Br-L	U	4	Tim	Sp	44.9	4	D	156	4600	20x7.00B	20x7.00DB
Day Elder 130	2½	2895	Con 16 R	6	4 x4½	38.4	75@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Sp	40.7	4	D	150	6400	20x7.50B	20x9.00DB
Day Elder 160	3	3695	Con 18 R	6	4 x4½	38.4	———	Pw	Zen	P	DR	Br-L	U	4	Tim	Wo	36.1	4	D	156	6600	20x7.50B	20x9.00DB
Day Elder 200	4	4295	Con 18 R	6	4 x4½	38.4	82@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Wo	43.5	4	D	156	7400	20x9.00B	20x9.00B
Day Elder 240	5	5500	Con 21 R	6	4⅝x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	4	Tim	Wo	50.8	4	D	162	9300	38x9P	38x9DP
Day Elder 285	6	6000	Con 21 R	6	4⅝x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	71.2	6	D	164	12000	20x8.25B	20x8.25DB
Day Elder 345	10	7500	Con 21 R	6	4⅝x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	79.9	4	D	164	12500	20x9.00B	20x9.00DB
Day Elder 402	12	8500	Con 16 H	6	4¾x5¾	54.2	127@2300	Pw	Zen	P	DR	Br-L	C	7	Tim	Wo	84.6	4	D	164	14000	20x9 75B	20x9.75DB
Diamond T 200	1	785	Bud	4	3¾x4½	22.5	57@3000	*Pw	Zen	P	Aut	W-G	U	4	Cla	Sp	—	4	D	128½	3050	30x5	30x5
Diamond T 215	1	885	Bud	6	3⅜x4	27.3	61@3000	Pw	Zen	P	Aut	W-G	U	4	Cla	Sp	—	4	D	135⅛	3150	30x5	30x5
Diamond T 290	1½	1475	Her WXA 2	6	3½x4½	29.4	58@2400	Pb	Zen	Vac	Aut	Cov	U	4	Col	Sp	—	4	D	156¼	4160	30x5	30x5D
Diamond T 303	2	1745	Her WXB	6	3¾x4½	33.7	66@2400	Pb	Zen	Vac	Aut	Cov	U	4	Tim	Sp	—	4	D	160¾	4850	32x6	32x6D
Diamond T 551	2½	2250	Her WXC	6	4 x4½	38.4	75@2400	Pb	Zen	Vac	Aut	Cov	U	4	Tim	Sp	—	4	D	168	5600	32x6	32x6D
Diamond T 506	2½	2820	Her WXC	6	4 x4½	38.4	75@2400	Pb	Zen	Vac	Aut	Cov	U	4	Wis	2R	—	4	D	172½	6300	34x7	34x7D
Diamond T 504	3	2925	Her WXC 3	6	4¼x4½	43.3	84@2200	Pb	Zen	Vac	Aut	Cov	U	4	Tim	2R	—	4	D	166½	6400	20x8.25B	20x8.25DB
Diamond T 602	3	3440	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	Gra	Aut	Cov	U	4	Tim	Wo	—	4	D	169½	7500	36x8	36x8D
Diamond T 606	3	3500	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	Gra	Aut	Cov	U	4	Wis	2R	—	4	D	186	7500	36x8	36x8D
Diamond T 700	3½	3740	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	Gra	Aut	Cov	C	4	Tim	Wo	R	D	162	8100	S36x5	S36x10
Diamond T 801	4	4140	Her YXC	6	4⅜x4¾	45.9	———	Pb	Zen	Gra	Aut	Br-L	C	7	Own	Wo	6WH	D	189½	8300	36x8	4 wh 36x8
Diamond T 1000	5	4420	Her YXC 2	6	4½x4¾	48.6	98@2200	Pb	Zen	Gra	Aut	Br-L	C	4	Tim	Wo	—	R	D	170½	9700	S36x6	S40x12
Diamond T 1200	6	5600	Her YXC 2	6	4½x4¾	48.6	99@2200	Pb	Zen	Gra	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	180	11000	34x7	4 wh 34x7D
Diamond T 1600	8	6220	Her YXC 3	6	4⅝x4¾	51.3	106@2200	Pb	Zen	Gra	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	190	11700	36x8	4 wh 36x8D
Diamond T 1601	8	7500	Wak 6 R B	6	5 x5¾	60.0	126@1800	Pb	Zen	Gra	Mag	Br-L	C	7	Tim	Wo	—	4RW	D	194	12500	36x8	4 wh 36x8D
Diamond T 2500	10-12	8000	Wak 6 R B	6	5 x5¾	60.0	126@1800	Pb	Zen	Gra	Mag	Br-L	C	7	Tim	Wo	—	4RW	D	194	13100	S36x7	4 wh 36x12S
Dodge Bros. UF10	½	435	Own	4	3⅝x4¾	21.2	48@2800	Pb	Car	P	DR	Own	U	3	Own	Sp	14.28	4	D	109	1855	5.00x19	5.00x19
Dodge Bros. F10	½	515	Own	6	3½x4⅛	23.4	61@3400	Pb	Car	P	DR	Own	U	3	Own	Sp	14.28	4	D	109	1960	5.25x19	5.25x19
Dodge Bros. U1	¾	695	Own	4	3⅝x4¼	21.3	45@2800	Pb	Car	Vac	NE	Own	U	3	Own	Sp	21.68	4	D	124	2260	5.50x20B	5.50x20B
Dodge Bros. DA1	¾	795	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	Vac	NE	Own	U	4	Own	Sp	36.83	4	D	140	2955	30x5	30x5
Dodge Bros. UF30	1½	595	Own	4	3⅝x4¾	21.0	48@2800	Pb	Car	P	DR	Own	U	4	Own	Sp	37.17	4	D	136	2665	6.00x20	32x6
Dodge Bros. F30	1½	695	Own	6	3½x4⅛	23.4	61@3400	Pb	Car	P	DR	Own	U	4	Own	Sp	37.17	4	D	136	2765	6.00x20	32x6
Dodge Bros. F35	1½	1425	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	P	DR	Own	U	4	Own	Sp	41.43	4	D	140	3780	6.00x20	6.00x20D
Dodge Bros. F36	1½	1485	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	P	DR	Own	U	4	Own	Sp	41.43	4	D	165	3972	6.00x20	6.00x20D
Dodge Bros. F40	2	1995	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	43.73	4	D	150	5175	6.50x20	6.50x20D
Dodge Bros. F41	2	2085	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	43.73	4	D	165	5211	6.50x20	6.50x20D
Dodge Bros. F60	3	2645	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	146	5543	32x6	32x6D
Dodge Bros F61	3	2575	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	170	5789	32x6	32x6D
Dodge Bros. F62	3	2695	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	195	5901	32x6	32x6D
Durant	*¾	495	Con	4	3⅜x4½	18.2	———	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	16.16	4	4	107	1670	28x4.75	28x4 75
Essex Commercial	¾	445	Own	6	2¾x4½	18.2	———	CS	Mar	Vac	Aut	Own	U	3	Own	Sp	17.8	4	4	110	2150	30x5	31x5.56
Federal D	1½	830	Con W 10	4	3⅞x4¼	24.0	48@2500	Pb	Zen	P	DR	W-G T9	U	4	Cla	Sp	40.8	4	Tr	131	3185	6.00x20	32x6
Federal E6	1½	1090	Con 17 E	6	3⅜x4	27.3	60@2600	Pb	Zen	Vac	DR	W-G T9	U	4	Cla	Sp	34.6	4	Tr	132	3260	6.00x20	32x6
Federal F7	1½	1525	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	P	DR	Own	U	4	Tim	Sp	24.3	4	Tr	132	3765	30x5	30x5D
Federal A6	2	1855	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Cla	Sp	38.5	4	Tr	151	4580	32x6	32x6D
Federal A6T	2½	2185	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Tim	Sp	41.3	4	Tr	151	4950	32x6	32x6D
Federal A6TW	2½	2360	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Tim	Wo	42.0	4	Tr	151	4950	32x6	32x6D
Federal T10B	2½-3	2740	Con 16 R	6	4 x4¼	38.4	75@2200	Pb	Zen	P	DR	Own	C	4	Tim	Sp	36.3	4	Tr	165	6550	34x7	34x7D
Federal T10W	2½-3	2915	Con 16 R	6	4 x4¼	38.4	75@2200	Pb	Zen	P	DR	Own	C	4	Tim	Wo	44.0	4	Tr	165	6550	34x7	34x7D
Federal U6	3-3½	3860	Con 18 R	6	4 x4½	38.4	85@2200	Pb	Str	P	DR	Br-L 55	C	7	Tim	Wo	64.6	4	D	165	7220	34x7	34x7D
Federal 4C6A	4-5	4735	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	73.6	4	D	192	8330	36x8	36x8D
Federal 4C6AB	4-5	4960	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	73.6	4	D	192	8850	36x8	36x8D
*Federal U6SW	6	6000	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	71.3	6	Tr	201	9850	34x7	34x7D
*Federal U6SWAB	6	6500	Con 20 R	6	4⅛x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	71.3	6	Tr	201	9900	34x7	34x7D
Federal X8	7½	5085	Con B 7	4	5 x6	40.0	61@1350	Pw	Zen	Vac	AB	Br-L 60	C	7	Tim	Wo	110.9	R	D	162	9750	36x8S	40x14S
Federal X8R	7½	5810	Con 21 R	6	4⅝x4¾	45.9	100@2200	Pb	Zen	P	DR	Br-L 60	C	7	Tim	Wo	110.9	R	D	162	10000	40x8	40x8D
*Federal 4C6SW	8	7500	Con 21 R	6	4⅝x4¾	45.9	100@2300	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	80.8	6	Tr	231	11500	36x8	36x8D
Ford AA	1½	510	Own	4	3⅞x4¼	24.0	40@2200	Sp	Zen	Gra	Own	Own	U	4	Own	St	42.24	4	R	131½	2723	6.00x20	32x6
Ford AA	1½	535	Own	4	3⅞x4¼	24.0	40@2200	Sp	Zen	Gra	Own	Own	U	4	Own	St	42.24	4	R	157	2811	6.00x20	6.00x20
F W D—H	1½	3300	Wis S U	4	4 x5	25.6	———	Pb	Zen	Vac	Eis	Cotta	C	4	Own	St	38.1	4	R	121	5300	34x7	34x7
F W D—H6	2	3425	Wak	6	3¾x4½	29.4	72@2500	Pb	Zen	Vac	Eis	Br-L	U	4	Own	St	35.0	4	R	133	5500	34x7	34x7
F W D—BTL	2	3900	Wak	6	3¾x4¾	33.7	72@2500	Pb	Zen	Vac	Eis	Br-L	C	7	Own	St	84.7	4	R	137½	6000	36x8	36x8
F W D—HH6	2½	4000	Wak	6	3¾x4¾	33.7	72@2500	Pb	Zen	Vac	Eis	Br-L	C	7	Own	St	101.0	4	R	138	6400	36x8	36x8
F W D—B	3	4200	Own	4	4⅜x5½	36.1	56@1350	Pb	Str	Gra	Eis	Own	C	3	Own	St	35.6	4	R	124	6460	36x6S	36x6S
F W D—BT	3-3½	4742	Wak	6	4⅛x5⅛	40.8	———	Pb	Zen	Vac	Eis	Own	C	5	Own	St	101.0	4	R	137¾	7700	40x7S	40x5SD
F W D—CU6	3½	5120	Wak	6	4⅛x5⅛	40.8	92@2300	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7200	36x6S	36x8S
F W D—SSU	4	5220	Wak	6	4⅝x5⅛	45.9	102@2200	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7600	38x9	38x9
F W D—M5	5	7600	Wak	6	4⅝x5⅛	45.9	102@2200	P	Zen	P	Aut	Br-L	C	8	Wis	2R	193.1	4V	D	165	11000	12.75x20B	12.75x20B
*F W D—X6	6	6500	Wak	6	4⅝x5⅛	45.9	102@2200	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	*	4	170	9500	36x8	36x8
F W D—M7	7½	8700	Wak	6	5 x5¾	60	127@2000	P	Zen	P	Aut	Br-L	C	8	Wis	2R	193.1	4V	D	165	13000	40x10P	40x10DP
Garford Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-

Major Specifications and Mechanical Details of 1930 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyls.	Bore and Stroke	Tax H. P.	Max. Brake H. P. at Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For.	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
*Gramm C	2	1795	Lyc ASA	6	3⅝x4½	31.54	82@2600	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	31	4	D	160	4820	7.00x20	7.00x20D
Gramm CX	2	1095	Con W-11	4	4⅛x4¼	—	55@2600	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	37	4	D	131	3300	6.50x20	6.50x20D
Gramm CX	2	1295	Con 16 C	6	3⅜x4⅝	—	70@3000	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	37	4	D	131	3300	6.50x20	6.50x20D
*Gramm D	2½	1995	Lyc ASD	6	3¾x4½	33.7	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	33	4	D	160	5100	7.50x20	7.50x20D
*Gramm E	3	2595	Lyc TS	6	3⅞x5	36	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	35	4	D	160	5500	8.25x20	8.25x20D
*Gramm EY	3	3595	Con 20 R	6	4½x4¾	40.80	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	30	4	D	190	6750	7.50x20	7.50x20D
*Gramm T-38	3	3595	Lyc TS	6	3⅞x5	36	90@2200	Pb	Zen	P	Aut	Ful	U	4	Wis	2R	45	D	R	153	7200	36x5S	36x10S
*Gramm O-45	4	3995	Lyc TS	6	3⅞x5	36	85@2200	Pb	Zen	P	Aut	Ful	C	8	Wis	2R	75.8	D	R	153	7700	36x5S	36x12S
*Gramm GY	4	4345	Con 21 R	6	4¾x4¾	45.9	100@2200	Pb	Zen	P	Aut	Cov	U	4	Wis	2R	28	4	D	210	7200	8.25x20	8.25x20D
Gramm GW	4	5175	Con 21 R	6	4¾x4¾	45.9	100@2200	Pb	Zen	P	Aut	Cov	U	4	Wis	2R	—	4W	D	157	8900	9.00x20	9.00x20D
*Gramm O-60	5	4745	Lyc TS	6	3⅞x5	36	——	Pb	Zen	P	Aut	Ful	C	8	Wis	2R	78.4	D	R	153	8800	36x6S	36x14S
*Gramm HY	5	6545	Con 16 H	6	4¾x5¾	54.15	127@2300	Pb	Zen	P	Aut	Ful	U	4	Wis	2R	25.2	4	D	236	9600	36x8	36x8D
Indiana 60	1	995	Con	6	3⅜x4	27.3	61@3000	Pb	Str	P	Aut	W-G	U	3	Col	Sp	—	4	Tr	132	3200	30x5	30x5
Indiana 64	1	1195	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Str	Vac	Aut	Br-L	U	3	Col	Sp	—	4	Tr	137	3400	30x5	30x5
Indiana 74	1¼	1290	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Str	Vac	Aut	Br-L	U	4	Col	Sp	—	4	Tr	137	3450	32x6	32x6
Indiana 11	1¼	1425	Her	4	4 x5	25.6	46@2000	Pb	Str	Gra	Aut	Br-L	U	3	Cla	Sp	—	R	R	129½	3500	30x5	30x5
Indiana 89	1½	1525	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Str	Vac	Aut	Br-L	U	4	Col	Sp	—	4	Tr	149	3650	32x6	32x6
Indiana 111	1½	1630	Her	4	4 x5	25.6	46@2000	Pb	Str	Gra	Aut	Br-L	U	3	Cla	Sp	—	R	R	129½	3600	30x5	32x6
Indiana 111 XW	2	1850	Her	4	4 x5	25.6	46@2000	Pb	Str	Vac	Eis	Br-L	U	4	Wis	2R	—	R	Tr	120	3740	32x6	32x6D
Indiana 120	2	1990	Con	6	4 x4⅛	38.4	73@2400	Pb	Str	P	Aut	Br-L	U	4	Tim	Sp	—	4	Tr	156	5200	32x6	32x6D
Indiana 140	2-2½	2495	Con	6	4 x4⅛	38.4	73@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	156	5500	32x6	32x6D
Indiana 141	2½	2935	Con	6	4 x4⅛	38.4	73@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	6200	32x6	32x6D
Indiana 115 A	2½	2740	Her	4	4¼x5	28.9	56@2000	Pb	Str	Vac	Eis	Br-L	U	4	Cla	Sp	—	R	Tr	132	4970	32x6	34x7D
Indiana 170	2½	3160	Con	6	4⅛x4¾	40.8	88@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	6800	32x6	32x6D
Indiana 175	3	3660	Con	6	4⅜x4¾	45.9	100@2400	Pb	Str	P	Aut	—	U	5	Wis	2R	—	4HV	D	170	7200	34x7	34x7D
Indiana 127 AW	3	3775	Her	4	4¼x5¾	28.90	54@1600	Pb	Str	Vac	Eis	Br-L	U	5	Wis	2R	—	RV	D	150¼	7000	34x7	34x7D
Indiana 627 AW	3	4075	Wis	6	4 x5	38.40	72@2000	Pb	Str	Vac	Eis	Br-L	U	5	Wis	2R	—	RV	D	156¼	7200	34x7	34x7D
Indiana 195	3-3½	3820	Con	6	4⅛x4¾	40.8	89@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	7500	34x7	34x7L
Indiana 190	3	4185	Con	6	4⅛x4¾	40.8	89@2400	Pb	Str	P	Aut	Br-L	C	7	Tim	Wo	—	RV	D	168½	7625	34x7	34x7D
Indiana 220	3½-4	4560	Con	6	4⅜x4¾	45.9	100@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	—	4HV	D	170	8200	36x8	36x8D
Indiana 250	5	5950	Con	6	4⅜x4¾	45.9	100@2400	Pb	Str	P	Aut	Br-L	U	4	Tim	Wo	—	4HMV	D	182	10000	40x8	40x8D
Indiana 290	7½	7250	Con	6	4¾x5¾	54.1	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	—	4W	D	182	10750	38x7P	40x14S
*Indiana 640	10	9700	Con	6	4¾x5¾	54.1	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	—	4W	D	212	14000	38x7P	36x10S
International AW1	¾	720	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Own	Sp	17.4	4	2	136	2620	5.25x20	5.25x20
Internat'n'l Sp. Del.	¾	720	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Eat	Sp	60.3	4	2	124	2200	5.25x30	5.25x30
Intern'l 6 Spd. Spec.	1	820	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Eat	Sp	52.6	4	2	124	2430	30x5	30x5
International S24	1¼	1160	Lyc C T	4	3¾x5	22.5	43@2350	Pw	Zen	Vac	DR	Own	U	3	Eat	Sp	21.3	4	2	130	3200	30x5	30x5
International S26	1¼	1310	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	3	Eat	Sp	21.3	4	2	130	3250	30x5	30x5
International AW2	1½	820	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Own	Sp	60.3	4	2	136	2980	5.50x20	6.00x20
International SF34	1½	1450	Lyc C T	4	3¾x5	22.5	43@2350	Pw	Zen	Vac	DR	Own	U	3	Eat	Sp	22.6	4	2	140	3520	30x5	32x6
International AL3	1½	1450	Lyc SLH	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	W-G	U	4	Own	Sp	42.9	4	2	138	4300	6.00x20	6.00x20L
International SF36	1½	1600	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	3	Eat	Sp	22.6	4	2	140	3570	30x5	32x6
International SD44	2	1590	Lyc C T	4	3¾x5	22.5	43@2350	Pw	Zen	Vac	AB	Own	U	4	Eat	Sp	40.6	4	2	117	3700	30x5	32x6
International SD46	2	1740	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	AB	Own	U	4	Eat	Sp	40.6	4	2	117	3750	30x5	32x6
International SF46	2	1950	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	4	Eat	Sp	40.6	4	2	140	4000	32x6	32x6D
International A4	2	1985	Own F B B	6	3⅝x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	47.8	4	2	145	5070	32x6	32x6D
International HS54	2½	3850	Hall-S 151	4	4½x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Eat	2R	60.5	4	4	148	8000	36x5S	36x8S
International HS54C	2½	3850	Hall-S 151	4	4½x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	63.8	4	4	148	8665	36x5S	36x10S
International W1	2½	3850	Hall-S 151	4	4½x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Own	2R	60.5	4	2	148	8300	36x5S	36x8S
International A5	3	2550	Own F B B	6	3⅝x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	52.6	4	2	156	5606	34x7	34x7D
International A6	3	2675	Own B B	6	3⅝x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	62.5	4	2	156	5750	34x7	34x7D
International HS74	3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Eat	2R	70.5	4	4	160	10700	36x5S	40x12S
International HS74C	3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	79.1	4	4	160	11000	36x6S	40x12S
International W3	3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	2R	70.5	4	2	160	10125	36x6S	40x12S
Internat'n'l HS104C	5	5500	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	90.5	4	4	160	11095	36x6S	40x14S
La France-Rep. A1	6000	795	Lyc	6	2⅞x4¾	19.8	59@3000	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	36.1	4	Tr	132	3000	5.50x20	32x6
La France-Rep. C1	7500	1295	Lyc	6	3¼x4½	25.4	61@2750	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	29.1	4	Tr	144	3300	6.00x20	32x6
La France-Rep. D1	9000	1595	Lyc	6	3¼x4½	25.4	61@2750	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	37.9	4	Tr	144	3725	30x5	30x5D
La France-Rep F2	13000	2395	Lyc	6	3⅝x5	31.5	83@2800	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	40.1	4	D	174	5400	32x6	32x6D
La France-Rep H2	15000	2985	Lyc	6	3⅞x5	36.0	——	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	44.5	4	D	174	5850	34x7	34x7D
La France-Rep. 35-2	24000	5600	Wak	6	4½x5¾	48.6	——	Pb	Zen	Vac	Aut	Ful	U	4	Wis	2R	45.4	4	D	174	8200	38x9D	38x9D
La France-Rep. M2	20000	4000	Wak	6	4⅞x5⅛	48.0	——	Pb	Zen	Vac	Aut	Ful	U	5	Wis	2R	62.3	4	D	174	6900	36x8	36x8D
Mack BL	1	2500	Own	6	3¼x5	25.39	63@2800	Pw	Str	Vac	NE	Own	U	4	Own	Sp	Opt	4	D	148	——	B6.00x20	DB6.00x20
††Mack BG	1½	3000	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	Sp	Opt	4	D	156	——	32x6	D32x6
Mack AB	2½-3	3950	Own	4	4¼x5	28.9	60@2200	Pb	Str	Gra	RB	Own	U	4	Own	2R	Opt	R	D	2-Opt	——	36x4S	36x8S
††Mack AB	2½-3	3500	Own	4	4¼x5	28.9	60@2200	Pb	Str	Gra	RB	Own	U	4	Own	Ch	Opt	R	D	2-Opt	——	36x4S	36x8S
††Mack AB	2½-3	4750	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	2R	Opt	R	D	2-Opt	——	34x7	D34x7
††Mack AB	2½-3	4300	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	Ch	Opt	R	D	2-Opt	——	34x7	D34x7
††Mack B	3-4	5250	Own	6	4 x5½	38.4	100@2300	Pb	Str	Vac	NE	Own	U	4	Own	2R	Opt	4	D	2-Opt	——	36x8	D36x8
††Mack BC	3½-5	5500	Own	6	4 x5½	38.4	100@2300	Pb	Str	Vac	NE	Own	U	4	Own	Ch	Opt	4	D	2-Opt	——	36x8	36x8D
††Mack BJ	3½-5	6150	Own	6	4½x5½	48.6	126@2200	Pb	Str	Vac	NE	Own	C	4	Own	2R	Opt	4	D	3-Opt	——	36x8	36x8D
††Mack AK	3½-5	5150	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	4	J	3-Opt	——	36x5S	36x5DS
††Mack AK	3½-5	5250	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	C	4	Own	2R	Opt	4	D	3-Opt	——	36x5S	36x5DS
††Mack AC	3½-5	4950	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	——	36x5S	40x10S
††Mack AC	5½-7	5500	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	——	36x6S	40x12S
††Mack AC	7½	6000	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	——	36x7S	40x14S
††Mack AP	7½	9500	Own	6	5 x6	60.0	150@2000	Pb	Str	Gra	NE	Own	J	4	Own	Ch	Opt	R	J	191	——	36x7S	40x8DS
††Mack AC 6-wheel	10	7500	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	4R	J	3-Opt	——	36x7S	40x12S
††Mack AP 6-wheel	10	12000	Own	6	5 x6	60.0	150@2000	Pb	Str	Gra	NE	Own	J	4	Own	Ch	Opt	4R	J	3-Opt	——	36x7	40x12S
Paige	¾	860	Own	6	3¼x4½	25.35	76@3400	Pb	DL	P	DR	W-G	U	3	Sal	Sp	17.36	4	Tr	115	2465	B5.50x19	B5.50x19
Relay Series 15 AA	¾	1370	Con 17 E	6	3⅜x4	27.3	52@2200	Pb	Str	Vac	Aut	W-G	U	4	Own	2R	38.4	4	D	131	3750	30x5P	30x5P
Relay Series 15 AB	1	1400	Con 17 E	6	3⅜x4	27.3	52@2200	Pb	Str	Vac	Aut	W-G	U	4	Own	2R	38.4	4	D	131	3800	P30x5	P30x5
Relay Series S 11	1	1700	Bud 11 S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	25.5	4	D	142	4050	30x5P	30x5P
Relay Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	30.0	4	D	162	4500	30x5P	30x5DP
Relay Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5300	34x4P	34x5DP
Relay Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5500	36x6	D36x6
Relay Series 50	2	3860	Bud D W 6	6	3¾x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	6800	36x6	D36x6
Relay Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	30.0	4	D	162	4700	32x6P	32x6DP
Relay Series 40	2½	3275	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5700	36x6	D36x6
Relay Series 50	2½	4000	Bud D W 6	6	3¾x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	7000	36x6	D38x7
Relay Series 60	2½	4555	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7350	36x6	D36x6
Relay Series 50	3	4130	Bud D W 6	6	3¾x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	7200	36x6	D40x8
Relay Series 60	3	4595	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7500	36x6	D38x7
Relay Series 60	3	4570	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Ful	U	5	Own	2R	58.5	4	D	175	7500	36x6P	38x7DP
Relay Series 80	3	5170	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8400	36x6	S40x10
Relay Series 60	3½	4745	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7800	38x7	D40x8
Relay Series 80	3½	5330	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.16	4	D	175	8600	36x6	S40x12
Relay Series 80	4	5380	Bud B A 6	6	4⅛x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.16	4	D	175	8800	38x7	S40x14
Relay Series 50 SW	5	5505	Bud D W 6	6	3¾x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	54.7	4	D	152	8600	36x6P	36x6DP
Relay Series 100	5	6615	Con 21 R	6	4¾x4¾	45.9	112@2400	Pb	Str	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	230	10000	9.00x24	D9.00x24
Relay Series 60 SW	7	6545	Bud B A 6	6	4½x5⅛	40.8	83@2000	Pb	Zen	Vac	Aut	Ful	U	5	Own	2R	63.6	4	D	175	12000	38x7P	40x8DP
Reo 15 Junior	½	785	Con 19 E	6	3⅜x4	27.3	60@2800	Pb	Sch	P	DR	W-G	U	3	Sal	Sp	14.63	4	Tr	115	2290	6.00x18	6.00x18
Reo D F 129	1	1695	Own C A	6	3⅜x5	27.3	80@3200	Pb	Sch	Vac	DR	Own	C	3	Own	Sp	17.1	4	Tr	129	3050	6.00x20	32x6
Reo D F	1	1095	Own C A	6	3⅜x5	27.3	80@3200	Pb	Sch	Vac	DR	Own	C	3	Own	Sp	17.1	4	Tr	135	3200	6.00x20	32x6
Reo F A	1½	1295	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	137	3525	6.00x20	32x6
Reo F E	1½	1395	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	152	3700	6.00x20	32x6
Reo F F	1½	1395	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	156	3750	6.00x20	32x6
Reo F H	2	1595	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	37.6	4	Tr	142	4165	32x6	32x6D
Reo F C	2	1645	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	37.62	4	Tr	152	4025	32x6	32x6D
Reo F D	2	1745	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	37.62	4	Tr	168	4075	32x6	32x6D
Reo G A	3	2035	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	C	4	Own	Sp	41.05	4	Tr	163	4625	32x6	32x6D
Reo G C	3	2140	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	C	4	Own	Sp	41.05	4	Tr	179	4850	32x6	32x6D
Reo G D	3	2085	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	C	4	Own	Sp	78.1	4	Tr	144	4570	32x6	32x6D
Reo G C S	3	2375	Own	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	210	5320	32x6	32x6D
Reo G B	3	2290	Own C F	6	3⅜x5	27.3	67@2800	Pb	Sch	Vac	DR	Own	C	4	Own	Sp	40.52	4	Tr	179	——	32x6.00	32x6D
Rugby T	½	655	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Own	U	3	Own	Sp	15.6	4	4	——	2160	29x5	29x5
Rugby 6-15	1	865	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Br-L	U	4	Sal	Sp	34.49	4	Tr	135	2900	5.50x20	32x6
Rugby 615	1½	930	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Br-L	U	4	Sal	Sp	34.49	4	Tr	135	3000	5.50x20	30x5D
Selden 7 C	1¼	1195	Con	6	3⅜x4	27.3	——	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	124	3100	30x5	30x5
Selden 17 C	1½	1500	Con	6	3⅜x4	27.3	61@3000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	142	3900	32x6	32x6
Selden 317 C	1½	1610	Con	6	3⅜x4⅝	27.34	65@2760	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	142	3900	32x6	32x6
Selden 37 C	2	1935	Con	6	3⅜x4⅝	27.34	65@2760	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	151	4800	32x6	32x6D
Selden 39 C	2½	2920	Con	6	4 x4⅛	38.4	72@2400	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	164	5800	32x6	32x6D
Selden 47 C B	3½	3785	Con	6	4 x4½	38.4	85@2400	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	171	7200	34x7	34x7D
Selden 47 C D	4	4435	Con	6	4 x4½	38.4	82@2400	Pb	Str	Vac	Aut	Br-L	U	5	Wis	2R	—	4	D	171	7600	36x8	36x8D
Selden 67 C	5	4975	Con	6	4¾x4¾	45.94	100@2400	Pb	Str	Vac	Aut	Br-L	C	7	Wis	2R	—	4	D	171	8700	36x8	36x8D
Selden 77	7	7365	Con	6	4¾x5¾	54.15	——	Pb	Str	Vac	Aut	Br-L	C	7	Wis	2R	—	4	D	178	12000	36x7	40x7D
Service Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	P30x5	P30x5
Service Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	P30x5	DP30x5
Service Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	52@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	P34x5	DP34x5
Service Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4500	32x6	D32x6
Service Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	36x6	D36x6
Service Series 40	2½	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	5100	P36x6	D36x6
Service Series 40	2½	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7000	36x6	D36x6
Service Series 60	2½	4580	Bud B A 6

Production -- Engineering -- Factory -

Piston Ring Manufacture And Progress

By A. PRESTON PETRE
Experimental Engineer
The American Hammered Piston Ring Company, Baltimore, Md.

The following in part is a paper presented before the Baltimore section, Society of Automotive Engineers. It will appear serially in The Automotive Daily News:

The primary purpose of a piston ring is to reduce leakage of fluids and gases under pressure past a stationary or moving piston to the side not under pressure, although it is also utilized to reduce oil consumption and transmit heat from piston to cylinder wall in internal combustion engines.

A piston ring is used for this purpose, as no better method is known to the trade of reducing leakage, permitting easy movement of a piston in its cylinder and still having a unit which will stand the wear and heat of operation.

Material

As far as we have been able to ascertain, piston ring material developed from hemp rope, in somewhat the following order:

Wood, rubber, bronze and gray cast iron, though many other materials were tried from time to time, and are still being experimented with as alloys and otherwise.

The generally accepted material for the majority of piston rings throughout the world is what is commonly known as the close-grained gray cast iron, characterized by high tensile strength, great resistance to abrasion and impact, and also exceedingly resilient when subjected to stressing. More will be said of this later, as it is an interesting subject to all concerned in the engine building and operating field.

Forms of Rings

It is almost impossible to go into the various designs of rings in detail, as the number of them is almost past belief.

We classify the types of rings for our own information according to their general design or name of designer.

One-piece rings, compression type, variations on these being somewhat as follows: Straight, angle, step, step seal, radiused step or trick joint, and any other peculiarity, such as radiused corners and restrictions, etc.

Multi-piece rings, compression type, include two-piece, three-piece, inner seal, two-piece seal, segmental, wedge, insert ring, duplex steam.

It is frequently necessary to follow some of these names up with some descriptive word, such as compressor, which designates its purpose.

Oil rings have two classifications: First, the ventilated type under which all slotted rings are grouped, and are designated as, slotted, ventilated, double ventilated, scraper drain, etc. Next, the solid one-piece oil rings are grouped and listed: Beveled, beveled and grooved, special beveled and grooved, contracting scraper, corner groove, etc., and last, but not least, the inner or expander ring. Anything beyond these class-

(Continued on Page 12)

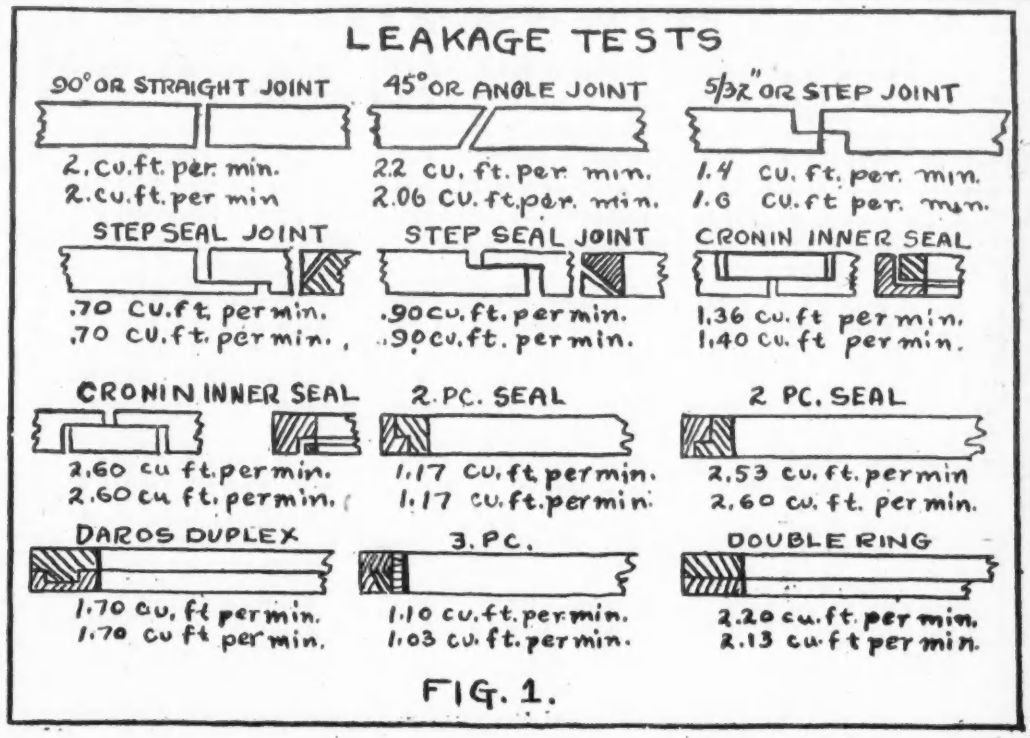

LEAKAGE TESTS
90° OR STRAIGHT JOINT
2. cu. ft. per. min.
2. cu. ft. per min
45° OR ANGLE JOINT
2.2 cu. ft. per. min.
2.06 cu. ft. per. min.
5/32" OR STEP JOINT
1.4 cu. ft. per. min.
1.6 cu. ft per. min.
STEP SEAL JOINT
.70 cu. ft. per min.
.70 cu. ft. per min.
STEP SEAL JOINT
.90 cu. ft. per min.
.90 cu. ft. per min.
CRONIN INNER SEAL
1.36 cu. ft per min.
1.40 cu. ft per min.
CRONIN INNER SEAL
2.60 cu ft. per min.
2.60 cu ft. per min.
2. PC. SEAL
1.17 cu. ft. per min.
1.17 cu. ft. per min.
2 PC. SEAL
2.53 cu. ft. per min
2.60 cu. ft. per min.
DAROS DUPLEX
1.70 cu. ft per min.
1.70 cu ft per min.
3. PC.
1.10 cu. ft. per min.
1.03 cu. ft. per min.
DOUBLE RING
2.20 cu. ft. per min.
2.13 cu. ft per min.

FIG. 1.

ANTI-KNOCK QUALITY IMPROVED DURING CRACKING PROCESS

An increase in either the time or temperature in cracking crude oil, even at atmospheric pressure, improves the anti-knock quality of gasoline, according to a report to the American Chemical Society by J. C. Gebiesse and Raymond Reuter of the Atlantic Refining Company, Philadelphia, Pa.

"The gradual increase in the use of high-compression pressure motors in automobiles to obtain more power from a given engine has necessitated the development of fuels having a greater tendency to resist detonation," says the report. "Higher quality fuels of this type are being produced from selected crudes which are inherently good, by cracking, and by blending, such as the addition of benzine or tetraethyl lead, chief constituent of ethyl gasoline.

"Of these three methods, the use of selected crudes and the use of blending agents are limited by availability, and are, therefore, not within the refiner's control. Cracking, on the other hand, is strictly within the refiner's control, and can be applied to produce the required stock.

"The yields of gasoline, gas and coke and the properties of these products indicate that the main effect of temperature is to increase the rate of reaction. That is, it is possible to obtain very nearly the same results with either short-time high temperature or long-time low temperature experiments. An increase of 17 degrees centigrade halves the time necessary to produce the same results.

"It has been recognized that, by raising the temperature of cracking, fuels may be produced with less tendency to detonate. The quality of a fuel obtained by high-pressure or liquid-phase cracking is limited, however.

"Vapor-phase or low-pressure cracking may be used where high temperatures are required to produce the type of fuel necessary. With this thought in mind, an investigation was undertaken for the purpose of studying the effect of time and temperature on the cracking reactions at atmospheric pressure."

Major Specifications and Mechanical Details of 1930 Commercial Cars

(Continued from Page 9)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Max. Brake H. P. Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For.	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Studebaker S-20	1½	695	Own	6	3¼x4½	25.4	68@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	36.2	4	4	130	2985	6.00x20	32x6
Studebaker S-30	1½	775	Own	6	3¼x4½	25.4	———	Pb	Str	P	DR	W-G	U	4	Tim	Sp	36.2	4	4	160	3140	6.00x20	32x6
Studebaker S-50	2	895	Own	6	3¼x4½	25.4	68@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	37.4	4	4	148	3810	6.50x20	6.50x20D
Studebaker S-60	2	945	Own	6	3¼x4½	25.4	———	Pb	Str	P	DR	W-G	U	4	Tim	Sp	37.4	4	4	160	3850	6.50x20	6.50x20D
Studebaker GN-N	4000	1245	Own	6	3⅜x4½	27.3	———	Pb	Str	P	DR	Cla	U	4	Cla	Sp	33.5	4	D	146	3265	30x5	32x6
Studebaker 77	12500	2895	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	158	5030	7.00x20	7.00x20D
Studebaker 88	12500	3295	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	184	5200	7.50x20	7.50x20D
Studebaker 99	14000	3795	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	184	5680	7.50x20	7.50x20D
Whippet 96 A	½	360	Own 96 A	4	3⅛x4¾	15.6	40@3200	Pw	Til	Vac	Aut	Own	U	3	Own	Sp	15.84	4	B	103¼	1665	4.75x19	4.75x19
White 15 B	———	1545	Own GKA	4	3⅜x5½	22.5	31@1600	CS	Zen	Vac	L-N	Own	C	4	Own	Sp	18.6	R	B	133½	3402	30x5	30x5
White 160	———	1700	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4025	30x5	30x5
White 161	———	1850	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4290	34x7	34x7
White 60	———	1850	Own 2 A	6	3½x4½	29.4	54@2100	Pw	Zen	Vac	DR	Own	U	3	Own	Sp	17.8	4	D	138	3739	30x5	30x5
White 162	———	1900	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4260	30x5	30x5D
White 210	———	2300	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	4875	30x5	30x5D
White 211	———	2425	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	5110	32x6	32x6D
White 212	———	2700	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	5230	34x7	34x7D
White 57	———	2725	Own GRC	4	4 x5¾	25.6	45@1600	Pw	Zen	Vac	L-N	Own	U	4	Own	Sp	19.3	R	R	146	3935	32x6	32x6
White 20 A	———	2125	Own GKA	4	3¾x5½	22.5	31@1600	CS	Zen	Vac	L-N	Own	C	4	Own	2R	32.1	R	R	145½	4572	34x5	34x5D
White 61	———	2450	Own 4 A	6	3¾x4½	33.75	61@2100	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	D	148	4789	30x5	30x5D
White 56	———	3125	Own GRC	4	4 x5¾	25.6	45@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	26.2	R	D	165	5276	36x4S	36x7S
White 51 A	———	3750	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	35.6	R	D	170	6438	36x5S	36x9S
White 51 AT	———	3875	Own 6 RB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	46.6	R	D	134	6227	36x5S	36x8S
White 58	———	4400	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	49.7	D	R	170	6438	36x5S	36x9S
White 65 K	———	4600	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	—	DR	Own	U	4	Own	Sp	33.9	4	D	180	7408	8.25x20B	8.25x20DB
White 55	———	4650	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	66.1	D	R	174	8737	36x5S	40x5SD
White 52 T	———	4700	Own GRB	4	4¼x5¾	28.5	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	76.5	D	R	129½	8461	36x5S	40x5SD
White 52	———	5100	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	5	Own	IG	58.4	D	R	174	9409	36x6S	40x12S
White 59 A	———	6000	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	66.5	D	R	155	9775	40x8	40x14S
White 63	———	5000	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	41.4	4	D	168	8350	34x7P	34x7DP
White 64	———	6300	Own 1 A	6	4⅜x5¾	45.94	96@1800	Pw	Zen	P	L-N	Own	U	4	Own	2R	46.9	4	D	180	9154	36x8P	36x8DP
White 63 SW 200	———	6010	Own 3 A	6	4 x5¼	45.9	72@1800	Pw	Zen	P	DR	Own	U	4	Tim	Wo	44.2	4	—	193	10000	8.25x20B	8.25x20DB
White 64 SW 200	———	7082	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Tim	Wo	45.8	4	—	198	11200	8.25x20B	8.25x20DB
White 64 SW 300	———	7430	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Tim	Wo	56.7	4	—	198	12400	9.00x20B	9.00x20DB
White 59 ASW 400	———	8950	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Tim	Wo	67.1	4	—	204	13200	40x8S	40x8D
Willys Six 98 B	½	525	Own 98 B	6	3⅛x3⅞	25.35	65@3400	Pw	Til	Vac	Aut	Own	U	3	Own	Sp	14.28	4	B	110	1904	5.50x19	5.00x19
Willys Six C-101	1½	695	Own C 101	6	3⅛x3⅞	25.35	65@3400	Pw	Til	Vac	Aut	Own	U	4	Cla	Sp	42.33	4	B	131	2740	5.50x20	30x5
Willys-Knight T-103	1½	825	Own KGT	6	2⅞x4⅜	20.7	55@3000	Pw	Til	Vac	Aut	Cov	U	4	Cla	Sp	42.33	4	B	131	2848	5.50x20	30x5

GENERAL NOTATIONS

†‡**REFERENCE MARKS** apply to individual lines only and explanations are given under the subdivision for each company in the **"SPECIAL NOTATIONS."**

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight in pounds.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Kgt, Knight; Lyc, Lycoming; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry.

LUBRICATION—Pb, pressure lubrication to main and connecting rod bearings; Pw, full pressure lubrication to all main, connecting rod and camshaft bearings, including wrist pins; CS, circulating splash; Sp, splash.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, Gravity; Vac, Vacuum tank; P, Fuel pump.

IGNITION — AB, American-Bosch; Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; N-E, North East; RB, Robert Bosch; DR, Delco-Remy; Mag, Magneto.

TRANSMISSION—Br, L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cotta Cotta Gear Company; Cla, Clark Equipment Company.

LOCATION—C, center, amid; U, in unit with engine; J, on jackshaft.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, Internal gear; St, Straight bevel; Sp, Spiral bevel; Wo, Worm; 2R, Double reduction; Ch, Chain; R, Relay drive.

BRAKES—J, Jackshaft; R, Rear wheels; D, Drive shaft; 4, four-wheel; Tr, Transmission; V, Vacuum booster; W, Westinghouse air brake; B, Both front and rear wheels.

TIRES—B, Balloon; D, Dual; S, Solid; P, Pneumatic.

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear, weight 6,400. Price $3,900.

Chieftain model also available as Dump Truck, 160-inch wheel base.

Balloon tires optional on Chief, Chieftain and Big Chief models.

AUTOCAR

*Engines in these models are located under the driver's seat.

BROCKWAY

*Six wheelers.

DAY ELDER

Additional standard wheel bases are available on different models as follows:—

60.....	156	200.....	165, 180, 204
85.....	156, 168	240.....	214
110.....	168, 186	285.....	216
130.....	165, 180, 204	345.....	216
160.....	165, 180, 204	402.....	216

DIAMOND T.

Myers Magazine oiling system for chassis optional equipment.

DURANT

*Price includes panel body.

F. W. D.

The BTL and BT models are special line construction trucks in which complete provision for mounting AT and T earth boring machine, winch, body and other line construction accessories is included in the standard chassis.

*Indicates six-wheel model.

Special power take-off transmission, which provides 3 power take-offs which may be operated in any transmission speed, optional on all models.

*Foot brake on X6 is a Bendix type, operating on all six wheels.

FEDERAL

*Six wheelers.

GRAMM

Series	Straight Rating	Add. Wheel Base	Pay Load Range
6	10,000	157-174	1⅛ tons
B	11,000	145-196	2 tons
C	13,000	145-196	2½ tons
D	15,000	145-196	3 tons

GENERAL MOTORS TRUCK

*Capacity indicated for each chassis is the recommended gross weight without exceeding rated capacity of tires. The tire size does not affect the straight rating for which chassis is guaranteed and each model is designed to operate satisfactorily under average conditions with loads giving a total gross weight (chassis, body, equipment and payload) equal to straight rating given below. The additional standard wheel base lengths, the number of additional tire types (tire combinations—each type carrying a recommended gross weight) and the ton range on a nominal payload basis for each model is given below.

Model	Straight Rating	Additional Wh. bases, ins.			Addit'l Tire Types	Pay'l Range
T-11	3800	None			None	½
T-15	5400	141			2	¾
T-17	6500	141			6	¾-1¼
T-19	8500	141		151	20	1-2
T-25	8500	141		152	15	1-1¾
T-30	11000	152		164	13	1½-2½
T-42	14000	152	164	181	10	2-3½
T-44	15000	152	164	181	10	2-4
T-60	18500	166¾	184½	200¼	15	2½-4½
T-82	22000	167½	185¼	201	10	3-6
T-90	28000	201		220	5	5-7½

Optional rear axle ratios are available for all models.

INDIANA

*Six wheelers.

MACK

Other wheel bases furnished on all truck models.

On 6-wheel jobs, 4 rear wheels driven by chains, foot brake on 4 rear wheels.

HYP—Hypoid drive, single reduction.

††Made also in tractor models.

REO

Model F A also available in 129-inch wheel base.

SELDEN

Additional standard wheel bases are available on different models as follows:—

Model 37C.....	162 and 181
39C.....	177 and 190¼
47CB, 47CD....	151, 164 and 184
67C.....	151, 164, 184 and 198

STEWART

Models 30 and 30X can also be supplied in 110, 120 and 140-inch wheel base.

Models 40 and 40X can also be supplied in 110, 140 and 160-inch wheel base.

*Model 34X can be supplied in 135, 145, 160 and 176-inch wheel base.

Model 28X can be supplied in 130, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160 and 176-inch wheel base.

*Model 26XW can be supplied in 148, 176 and 190-inch wheel base.

*Models 18X, 32X and 33X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment models 18X, 19X, 33X, 31X and 27X can be supplied with Timken dual reduction rear axle.

STUDEBAKER

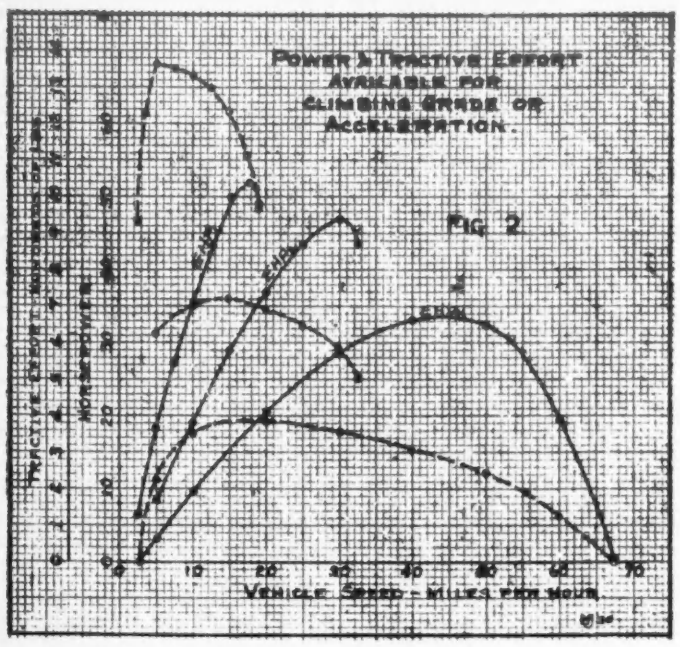
*Capacity model GN-N is 4,000 pounds for body, cab, driver and payload.

Maximum gross load, chassis, body and payload for Models 77 and 88 is 12,500 lbs. and for Model 99 is 14,000 lbs.

‡Hand brake same as foot brake, standard. Hand brake on drive shaft, special equipment.

Equipment - - - Development

Predicting and Determining Vehicle Performance



By PROF. H. M. JACKLIN
Purdue University, Lafayette, Ind.

The following, in part, is the second installment of a paper presented before the December meeting of the Indiana section of the Society of Automotive Engineers. It will appear serially in the Automotive Daily News:

The ordinates between these three curves, Hph, Hp2, and Hp1, and the horsepower required Hpq are measured at selected vehicle speeds and plotted in solid lines in figure 2. These ordinates are a measure of the excess power available over that required to propel the vehicle over a level concrete road in still air at the selected speed. It should be noted in both figures 1 and 2 that there is no excess power available in high gear at about 3 and at 67.5 miles per hour, which represent the minimum and maximum speeds of the vehicle under these operating conditions. This excess power

$$TE = \frac{EHp \times 33000 \times 60}{VR \times 5280} = \frac{375\ EHp}{VR} \qquad (2)$$

(EHpH in high, EHp2 in second, and EHp1 in low) is available for climbing a grade or for accelerating the vehicle. If the peak of the horsepower curve Hph is moved to the right to point M by a change in the high gear (as is attempted when the four speed gear box is used) the top speed will be increased between 3 and 4 miles per hour, but the excess horse power will decrease all along the line. Acceleration and hill climbing ability suffer, but, since the throttle must be opened wider for any given vehicle speed, better combustion and increased economy result, as well as lessened engine wear because of the relatively lower engine speed. In this case, the gear reduction for these results would be 3.58, making the ratio between third and fourth speeds 4.58 to 3.58 equal to 1.28 to 1, which is a gear change easily made without excessive clashing of gears.

Tractive Effort

It should be apparent that all these curves might have been presented in terms of tractive effort as easily as in terms of horse power. In Fig. 2, three dash line curves represent the excess tractive effort in pounds available in high, second and low gears respectively for this case. They are calculated from the horse power values by the following formula:

From looking at the excess horsepower curves in Fig. 2, it might be inferred that maximum grade and maximum acceleration would occur at 18, 30 and 44 miles per hour in the several gears, but this is not true. The peaks of the tractive effort curves correspond to maximum values of grade and acceleration, as will become apparent.

Grade

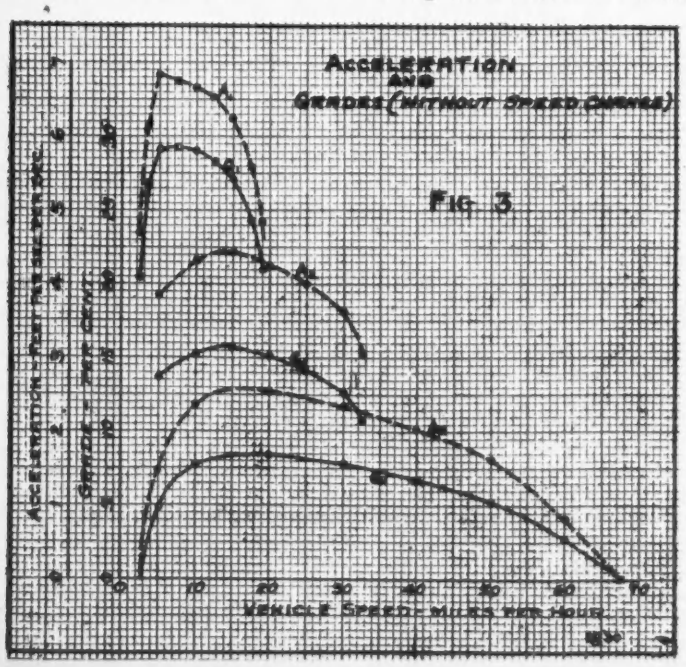
Having these values for tractive effort, it becomes an easy matter to calculate the maximum possible grades that may be climbed without change in speed from that on a level road. If allowance were made for a decrease in speed, thus taking advantage of the kinetic energy in the vehicle and its rotating parts, considerably greater grades can be negotiated in each gear. The equation for the first-mentioned condition is:

$$G = \frac{100\ TE}{W} = \frac{TE}{4600}$$

(W = weight of vehicle, pounds)

This equation is sufficiently accurate for the ordinary grades encountered, since the sine and tangent for the angle of such grades are substantially the same.

Figure 3 shows the grades that may be climbed on a concrete road in each gear for this vehicle, GH, G2 and G1, are the possible grades for high, second and low, respectively. G1 shows a maximum value for this vehicle of about 29 per cent., which is an entirely satisfactory value. A maximum value of 8½ per cent. is shown in high gear. Manifestly, most vehicles of this type climb sharper short grades, but they do it only with a loss in speed thus using up kinetic energy. For the condition stated, viz., a change from level road operation to maximum grade operation without a change in speed, the value is excellent.



(To be continued)

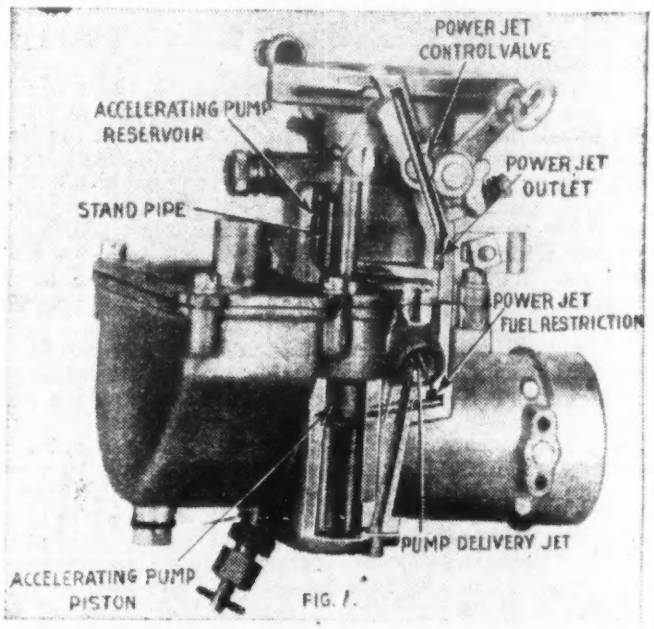
PACKARD PLANS EXHIBIT AT ROOSEVELT DURING SHOW

New York, Dec. 18.—In accordance with its custom of the past several years, the Packard Motor Car Company of New York will occupy the entire main lobby of the Hotel Roosevelt with a special display of representative models of its entire line, in conjunction with its exhibit at the National Automobile Show, held annually at Grand Central Palace.

INTRODUCES NEW BRAKE PLIERS

Forged Steel Products Company, Newport, Pa., recently introduced a brake pliers for adjusting the knurled nut on Steeldraulic brakes.

Tillotson Announces New Model J Carburetor



The Tillotson Carburetor Company, Toledo, has just announced its new Model J carburetor, a compact unit which is adaptable to practically all makes of engines ranging from 30 to 95 horse power, it is claimed.

All auxiliary moving parts have been eliminated in this new model, with the exception of the accelerating pump, which is operated directly from a lever on the throttle shaft.

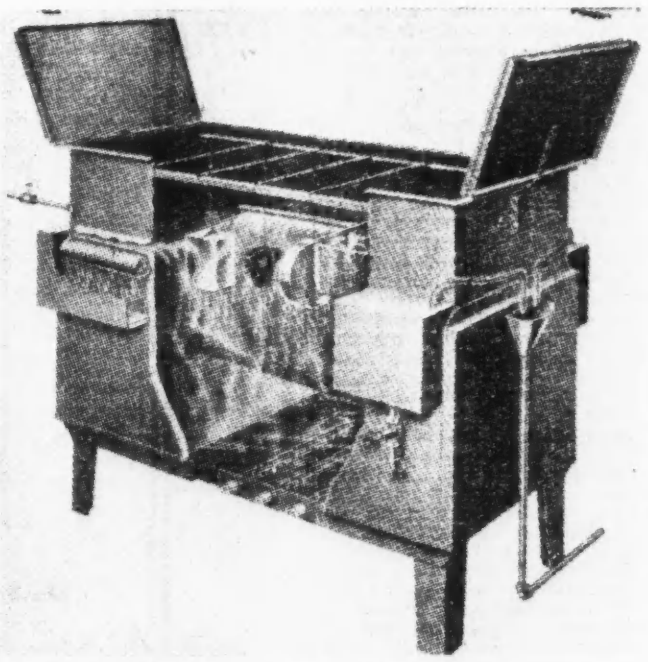
The accelerating pump cylinder is retained in the float bowl, and is kept filled at all times with gasoline from the bowl. When the throttle is opened the pump plunger (Fig. 1) is forced down and the fuel under the accelerating piston is then forced up through a channel leading up to the pump delivery jet which delivers the accelerating charge into the throat of the carburetor. Any fuel displaced by the piston in excess of that metered out of the pump delivery jet during the stroke of the piston is forced over to the pump reservoir, from which it flows by gravity back to the pump outlet jet—thus causing the pump jet to deliver fuel for some time after the throttle has stopped moving. The duration of the delivery of the accelerating charge is determined by the characteristics of the engine being carbureted, and therefore must be variable. The duration of the charge is controlled by the length of the standpipe in the pump reservoir. Any fuel forced into the pump reservoir after the level in the same is up to the top of the standpipe overflows into the standpipe and returns to the float bowl—thus the duration of the charge is controlled by varying the length of the standpipe in the reservoir. The metering, or rate of discharge of the accelerating charge, is controlled by the size of orifice in the pump delivery jet.

The power jet fuel restriction (Fig. 1) is supplied with gasoline by means of a channel directly from the float bowl. The power jet outlet is located in the throat of the carburetor just above the choke of the venturi. This outlet functions only when the throttle is wide open because of the power jet control valve, located in the throttle shaft. In Fig. 1 the throttle is shown in the closed position. A hole drilled in the throttle shaft is directly in line with the channel leading to the power jet outlet. This channel is drilled through the throttle shaft bearing and is open to atmosphere at a point above the shaft. This keeps the power jet outlet from delivering fuel at partial throttle positions, since there is atmospheric pressure at the power jet outlet and fuel cannot be lifted to it. As the throttle opens, that section of the channel contained in the throttle shaft is turned out of line with the rest of the channel and completely closes the channel to the atmosphere after the throttle is more than seven-eighths open. This allows the power jet outlet to form a vacuum in the channel and thus lift the gasoline from the power jet fuel restriction which meters the fuel required for enrichment at wide open throttle.

The spring loaded valve in the choke butterfly is said to insure easy starting at all temperatures and makes the choke control insensitive when used during the warming-up period of the engine.

On the Model J carburetor the power jet, which functions only at wide open throttle, or when power is required, is calibrated to meter the additional 10 to 15 per cent. richer mixture required for maximum power.

Vapor Process Utilized For Grease Removal



Tank used in Carrier vapor cleaning process.

Carrier Engineering Corporation, Newark, N. J., recently developed a vapor degreasing process. The process utilizes "Cecolene" a chlorinated solvent which is boiled and vaporized in a specially designed tank. Vapor condenses on the suspended articles and runs off carrying with it all grease and dirt, it is claimed. The system can be operated by steam, gas or electricity.

The parts are kept in the vapor bath until the vaporizing temperature is reached which requires from 1½ to 3 minutes. When removed they are clean and dry and any foreign matter remaining in the form of dust is easily removed.

Since the solvent vaporizes at a temperature much lower than grease or oil, the parts to be cleaned do not come in contact with grease previously removed which remains in the liquid below. The solvent can be used repeatedly, the manufacturers state.

Contemporary Comment

(Continued From Page 4)

develops that the recent advance of $1 a ton on bars, plates and shapes had the customary effect of driving in considerable tonnage at the previous prices, with the result that many of the larger buyers are covered through most of the first quarter at 1.60 cents a pound, Pittsburgh. Efforts to contract for these products through the first half of 1931 have been unsuccessful.

While steel contracts, in contrast with those for pig iron, are of an optional character and permit buyers to cancel tonnage that remains unspecified, the desire of the trade to obtain protection is an earnest of that confidence in prices that is prerequisite to a change in the business trend.

Rails placed during the week total 35,500 tons, including 20,000 tons for the Louisville & Nashville, 10,500 tons for the Wabash and 5,000 tons for the Chicago Great Western. Railroad equipment buying is featured by the purchase by the Santa Fe of 1,522 freight cars, requiring 20,000 tons of steel for the superstructures alone.

Rail mill operations at Chicago have risen to 50 per cent. of capacity, compared with 40 per cent. a week ago. Tin mill output has gained for the second consecutive week, now averaging 50 per cent. Steel ingot output for the country at large is unchanged from last week at 38 per cent., but further curtailment is in prospect during the holiday weeks.

The Iron Age pig iron composite price declines this week to $15.90 a ton, a drop of 12 cents, and is at its lowest point in fifteen years. The composite prices for finished steel and heavy melting scrap are unchanged, the former at 2.121 cents a pound and the latter at $11.25 a ton.

New projects requiring fabricated structural steel total 23,500 tons this week, making the weekly average so far this quarter 48,000 tons. Among the larger construction plans is an airship dock for the International Zeppelin Transportation Corporation in New York, taking 9,570 tons; an office building at 6th Avenue and 41st Street, New York, 1,200 tons, and the Roosevelt Hotel, Wichita, Kan., 2,400 tons.

"Awards covered 29,500 tons compared with 34,000 tons, the weekly average since September. Included were 7,000 tons for a penitentiary on Riker's Island, New York; 5,100 tons in a section of New York subway; 3,000 tons of welded steel pipe for Los Angeles and 2,400 tons in approaches to an Ohio River bridge at Evansville, Ind.—**Iron Age Weekly Market Summary.**

Piston Ring Manufacture

(Continued from Page 10)

ifications are commonly known to most of us as trick rings.

Suitability

The suitability of a ring for an installation is controlled by many variables ,some of which are given herewith: Design of engine, design of piston, location of rings on piston, piston speeds, lubrication system, operating temperatures, compression pressures, piston clearances, etc., material to be pumped or compressed. Without knowing some of these variables after an effort to ascertain them, we usually suggest plain step joint compression rings, and some type of oil ring usually of the ventilated design, for internal combustion engines.

In the aeronautical field and where large piston clearances are prevalent, the narrow ring of from 3-32 inch to ⅛ inch in width with a plain beveled oil ring is usually suggested, if we are consulted, as this installation seems to be superior for that work and is in frequent use, though a ventilated oil ring is used in some cases.

The high-speed automotive engine may best be handled with medium narrow rings, and undoubtedly ventilated oil rings, the number of rings required depending much on the characteristics of the engine, though two compression and one oil ring is frequently met with.

Air compressors of medium pressures and sizes find the single, two and three-piece rings satisfactory, though naturally the multi-piece rings of this class are preferable.

Engines of the Diesel type perform well when in good condition with one-piece compression rings, preferably with the step seal joint, the number used per piston depending on the engine designer and the speed of the engine. The multi-piece rings are superior under most conditions for the Diesel engines, as they work under high pressures and low speeds, where it is necessary to prevent all possible leakage by every reasonable means.

The multi-piece rings are highly advisable in large-sized worn cylinders, where the one-piece ring cannot prevent excessive joint leakage at the point of maximum cylinder wear.

Test

One quite odd phenomenon regarding the heat transfer of alloyed metals is that frequently the ingredient showing the lowest heat transmission in its natural state controls the alloy's heat dissipation. For instance, the ability of pure silver to conduct heat is much greater than that of copper, yet it is likely to occur with a mixture of silver and copper that the heat conductivity of the alloy is that of the copper and not of the alloy, as would be expected.

In regard to this heat transmission of pistons and rings an interesting determination has been made under static conditions and, that is, heat dissipated through the ring belt of an aluminum alloy piston amounts to about 60 per cent., or over, of the entire amount leaving the piston.

Lubrication control of automotive engines is constantly being experimented with, both in a Chrysler engine on the dynamometer stand and in the Chrysler road car, the only method we consider to be sufficiently accurate to base a definite opinion on. In these tests the oil is carefully weighed before and after the test run, as by this method we can assure far closer measurements of lubricant consumed. The dynamometer runs under constant temperature pressure and speed, the oil being cooled to constant temperature and moved in continuous volume.

(To be continued)

FORD DEALER ELECTED

Tacoma, Wash., Dec. 18.—Herbert G. Schreiber, president and manager of Edward P. Leonard, Inc., South Tacoma Ford dealer, has been elected district trustee of the South Tacoma Kiwanis Club for 1931.

TRAINED SERVICE BY TIRE DEALER BUILDS BUSINESS

Side-Street Shop Expands to Big Station In Two Years

SERVICE that considers the best interests of their patrons above everything else is the formula by which the Jones Brothers of Grand Junction, Col., have in two years' time built a side street tire shop into a modern tire and automobile service that is one of the outstanding business establishments of a city of 15,000.

Two years ago the "Jones boys" went to school in the Goodyear repair factory in Los Angeles. They came back and put their fortune in a little tire shop on a side street of their home town. With their father handling the books, Ted went out to get the business and Joe took care of it in the shop, with an assistant or two added as business grew.

Today the "shop" occupies one of the best corner locations of the city, 50 to 140 feet. The front is the service station, equipped with a hydraulic lift in addition to a grease pit, complete Alemite pressure greasing system, four Wayne electric gasoline pumps and an automatic tire pressure air straining pump.

Across one corner of the station is an oil and accessory room, where the oil is heated and run in pipes to the grease rack on the other side of the partition. Oil and accessories are displayed in the windows, facing the station. Across the other corner is a comfortable office and tastefully furnished waiting room, with big windows looking out on the station, where a patron may sit and watch his car being cared for. Here, also, is the tire showroom. This room in itself is almost as large as the entire shop at the old location.

On entering the station patrons are impressed with the orderliness. Even on a busy day it has the "feel" of smooth-working effeciency.

The back half of the establishment is given over to the vulcanizing and tire department, with the exception of a small room at one side where a battery-charging service is being installed—this on the insistent demands of the shop's customers.

In the rear half of the building, like the service station, is the orderly system of "a place for everything and everything in its place," and the system holds no matter how great the pressure of business. Tools are laid out where they can be reached by a turn of the hand. Cement floors are swept clean. Repaired tires and tubes, awaiting their owners, are placed immediately on the completion of the repair work in a rack just inside the entrance from the station. There is no clutter, no confusion, no trash around to trip over and cause fire menace.

The whole is patterned as nearly as possible along the lines of the Goodyear factory in Los Angeles. Across one end, where two big windows face on a side street is the Keintz electric steam vulcanizing equipment, to handle any size tire. Close to it, in an immaculate white room that insures absolute cleanliness and prevention of dirt penetrating into the cement, tires are built up preparatory to vulcanizing.

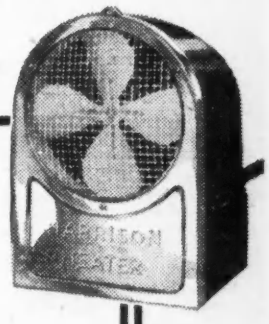
Included in the department's equipment is a Ke-Haw-Ke spreader, spreading all sides of the tire at once, for installing reliners and inserting tubes in and inspecting big tires; two fully equipped benches, where two men can work at once in patching tubes, and, nearby, a Goodyear Perfection tube testing tank, and a rack along each side of the big room, one for patrons' tires on which repairs have been completed and the other containing used tires for sale.

An unusual service feature is a file for delivery trucks of the various city business houses, where a driver, in a hurry to deliver goods and demanding quick service, can get a tube without having to wait for his to be repaired. When his tube is patched, it is returned to the file under his number, and the next time he has a flat he gets that tube and leaves the newly-punctured one.

The shop has two trucks, giving service to city and country until 11 o'clock each night.

INDUSTRY'S 1929 PRODUCTION CLOSE TO $4,000,000,000

New York, Dec. 18.—In Automotive Daily News of December 18 appeared a story from Washington, D. C., under a heading, "1929 Automotive Products Valued at Three Billion." This heading was misleading, in that it referred only to the motor vehicle manufacturers. The actual total for the industry, as given by the Census Bureau, was more than $3,700,000,000, or close to $4,000,000,000.



Type "A" for dash installation.

Announcing

The *New*

HARRISON HOT WATER HEATERS

The Harrison Radiator Corporation, world's largest producer of automobile radiators, is now manufacturing Hot Water Car Heaters for automobile use.

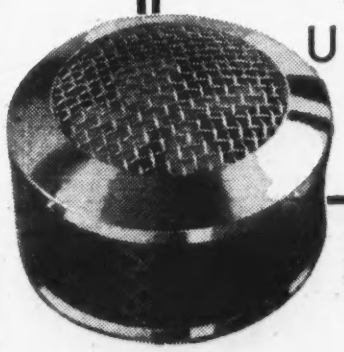
Thorough analysis of heating requirements has resulted in the perfection of two types of heaters to supply the demands of the motoring public. Abundant heat, scientifically distributed throughout the car, plus simplicity of design and installation, combines to insure satisfactory performance.

Harrison Hot Water Heaters are now being distributed to the automotive trade through Branches and Authorized Service Stations of United Motors Service.

HARRISON RADIATOR CORPORATION
LOCKPORT, N. Y.

DISTRIBUTED TO THE TRADE BY

UNITED MOTORS SERVICE



Types "D" and "E" for rear compartment and dash installation.